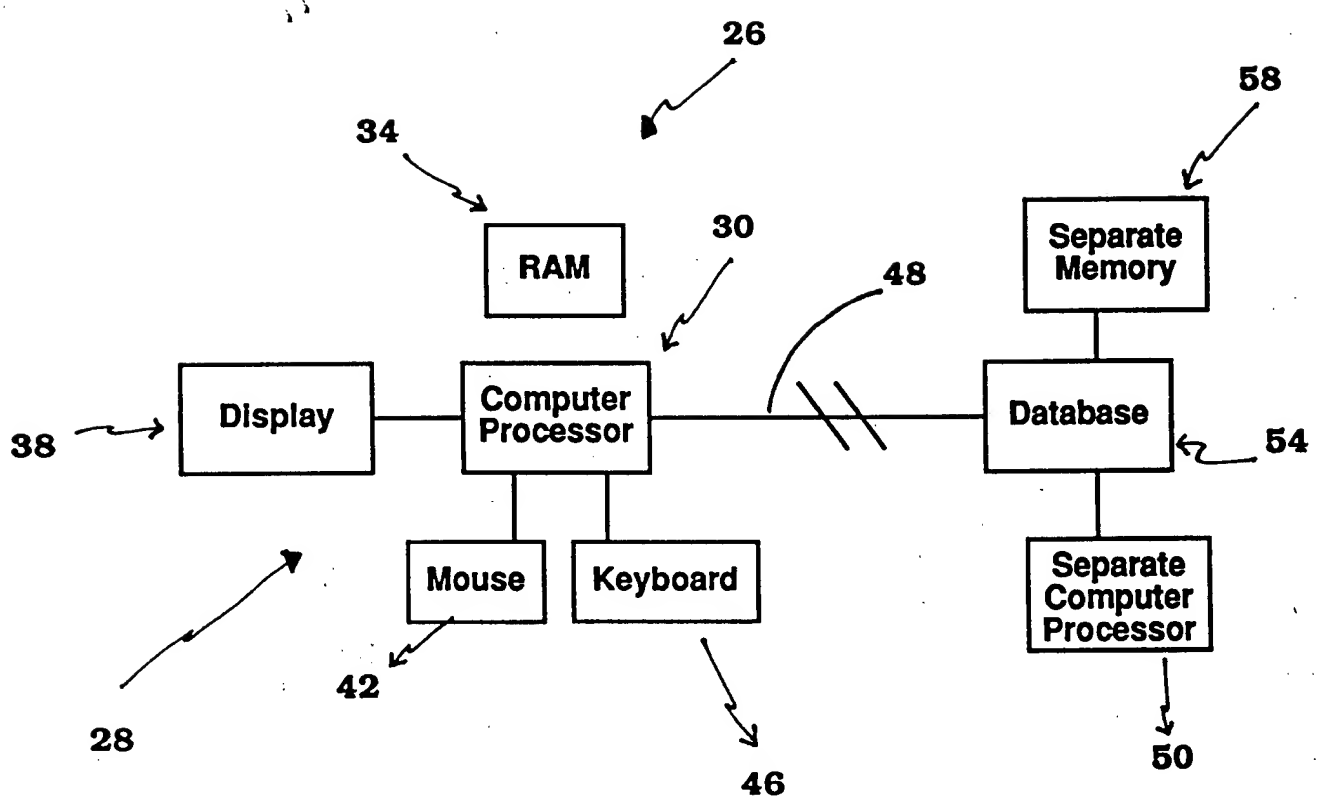

26
34
58
RAM
30
Separate Memory
48
Display
Computer Processor
Database
38
54
Mouse
Keyboard
Separate Computer Processor
42
28
46
50

FIG. 1

Fig. 10

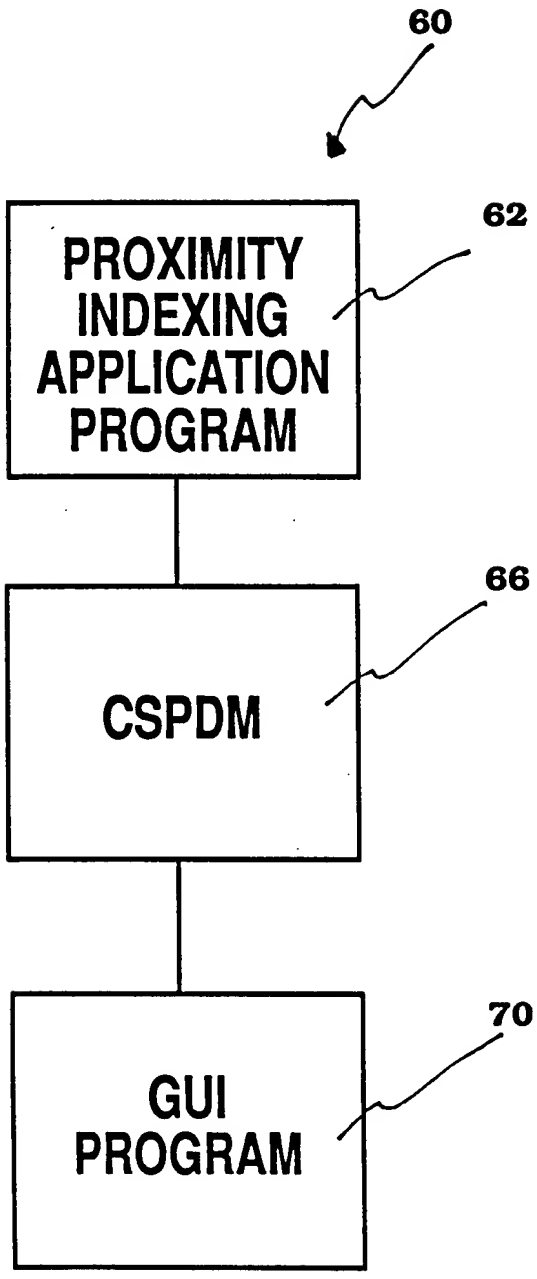

60
PROXIMITY INDEXING APPLICATION PROGRAM
62
CSPDM
66
GUI PROGRAM
70

FIG. 2

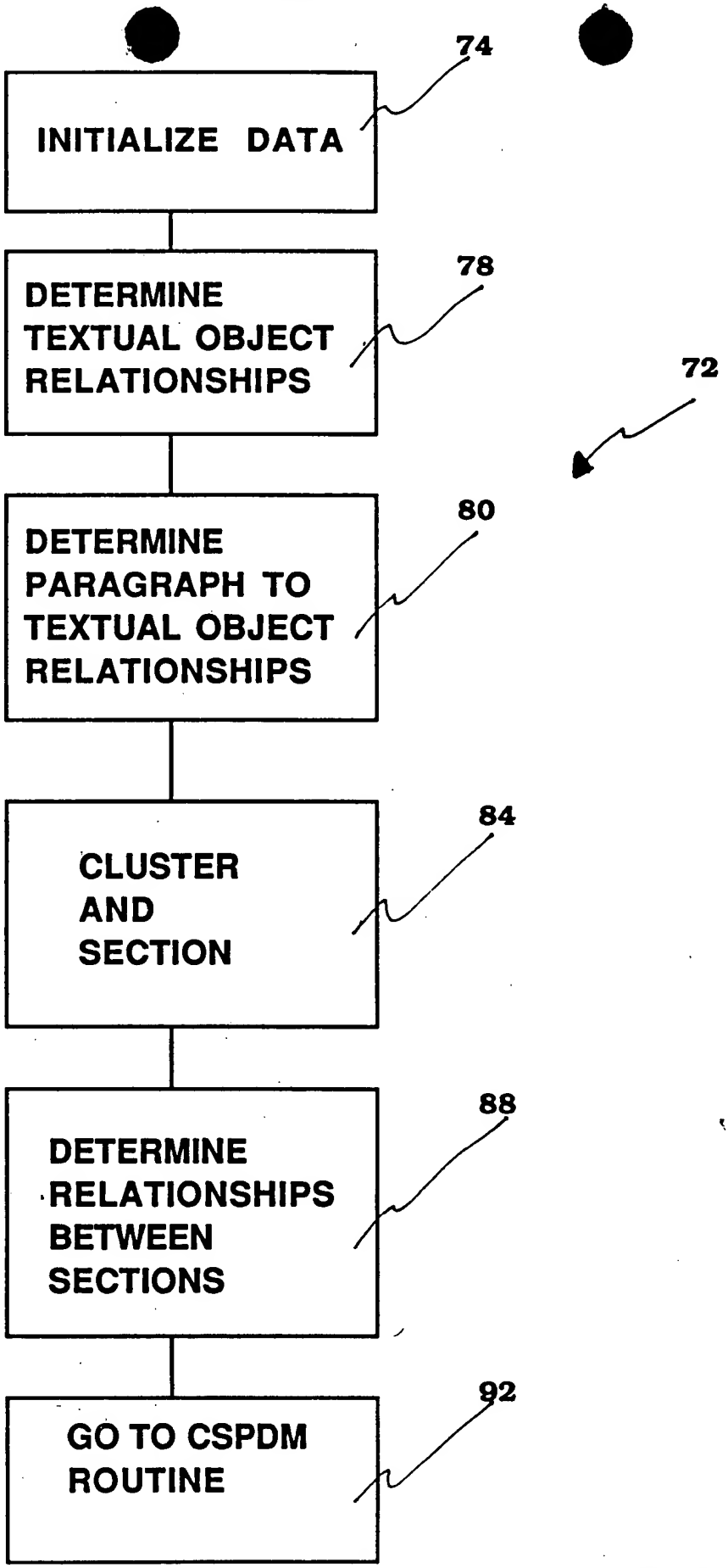

INITIALIZE DATA
74
DETERMINE TEXTUAL OBJECT RELATIONSHIPS
78
72
DETERMINE PARAGRAPH TO TEXTUAL OBJECT RELATIONSHIPS
80
CLUSTER AND SECTION
84
DETERMINE RELATIONSHIPS BETWEEN SECTIONS
88
GO TO CSPDM ROUTINE
92

FIG. 3A

08 649304

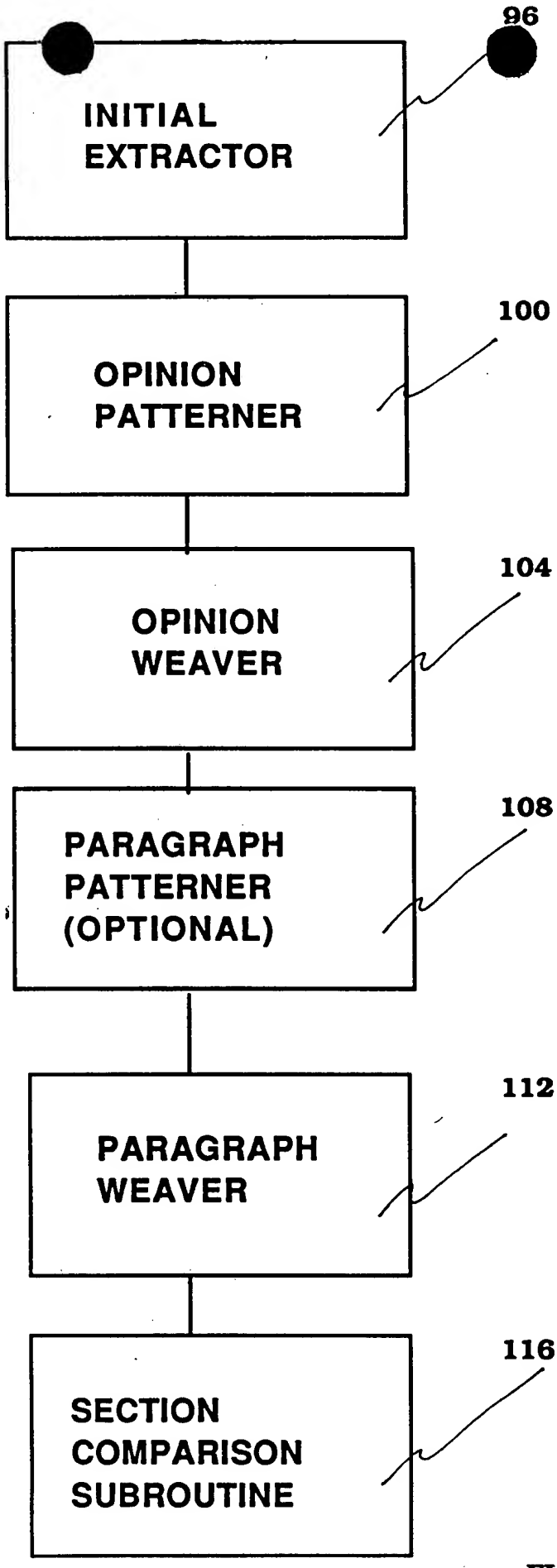


FIG. 3B

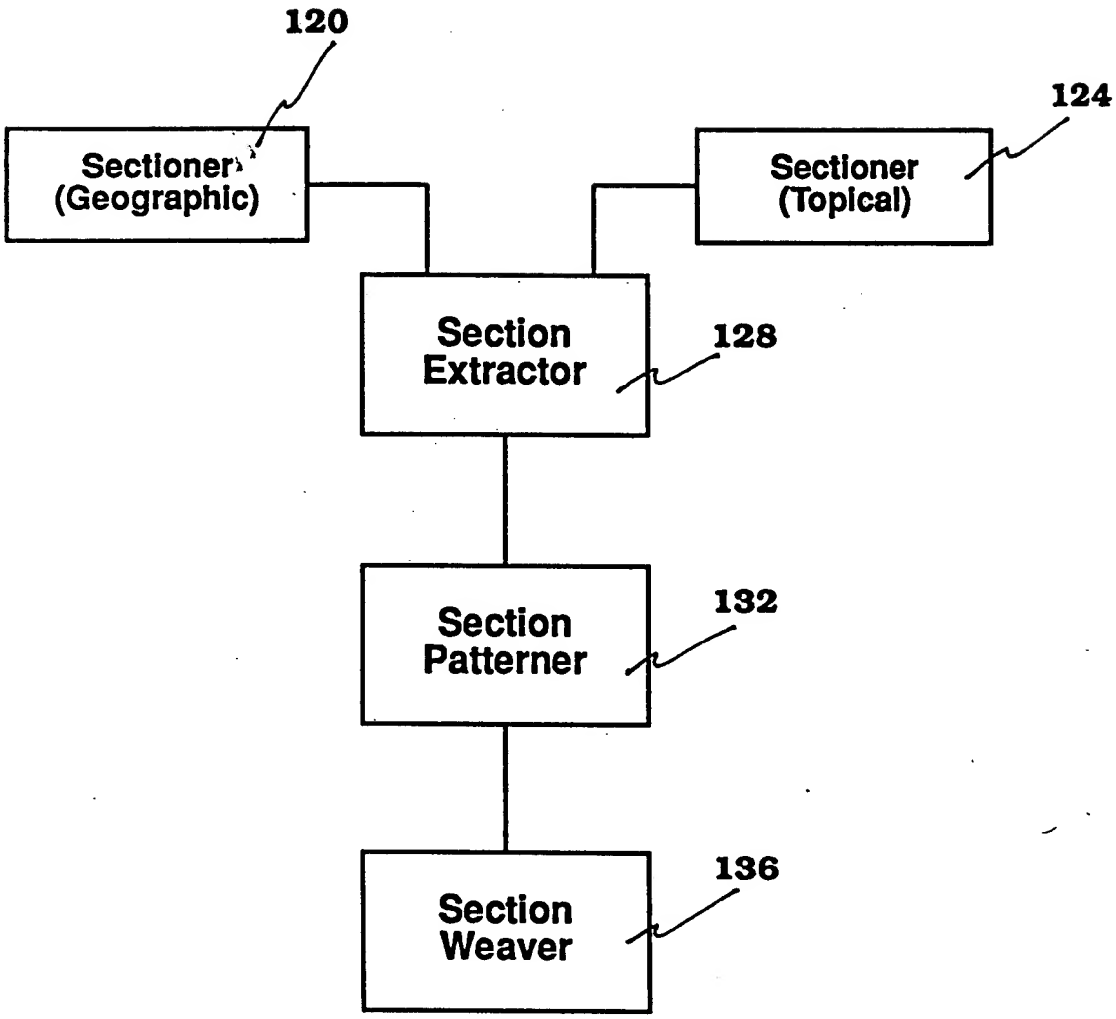

120
Sectioner (Geographic)
124
Sectioner (Topical)
Section Extractor
128
Section Patterner
132
Section Weaver
136

FIG. 3C

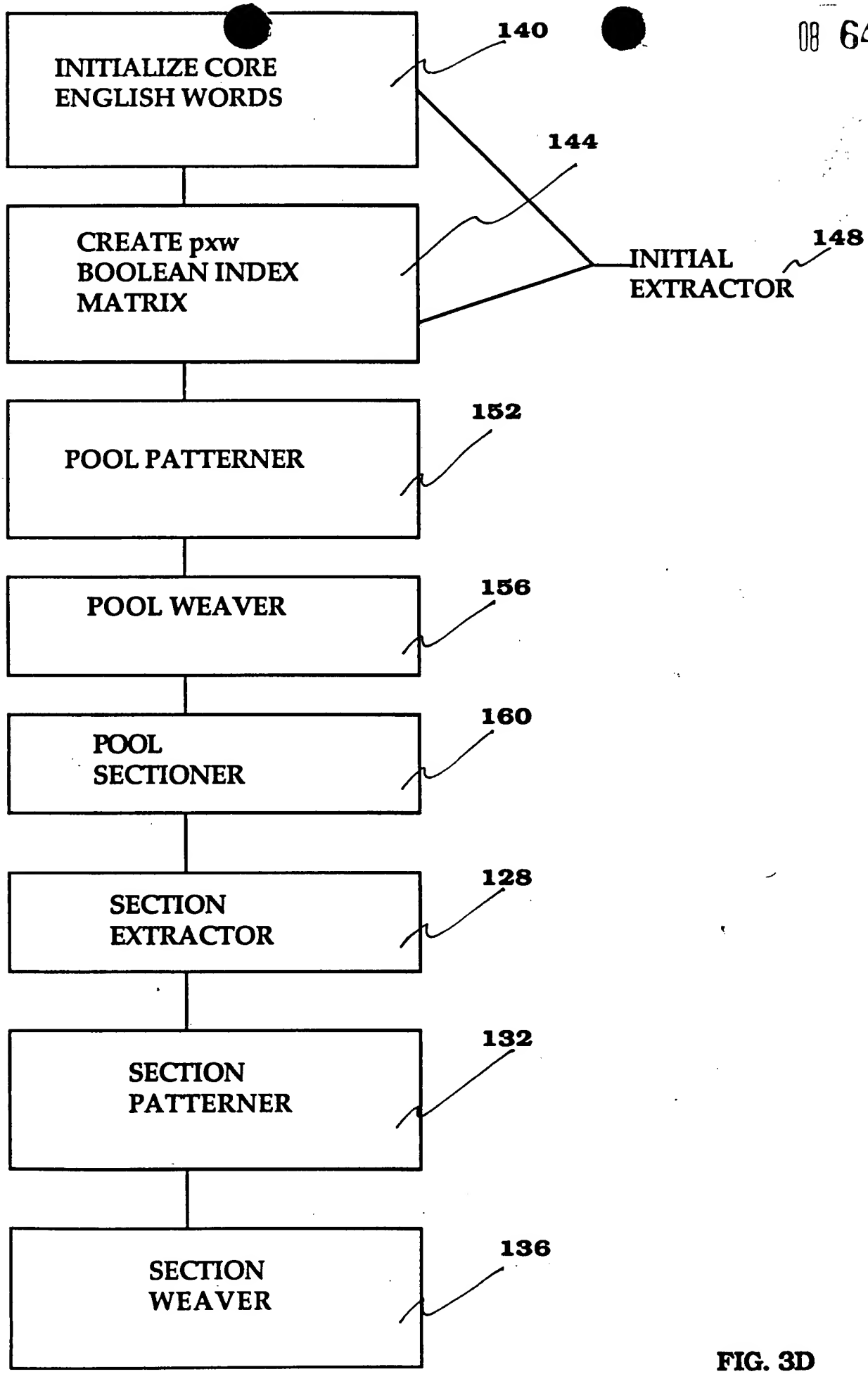
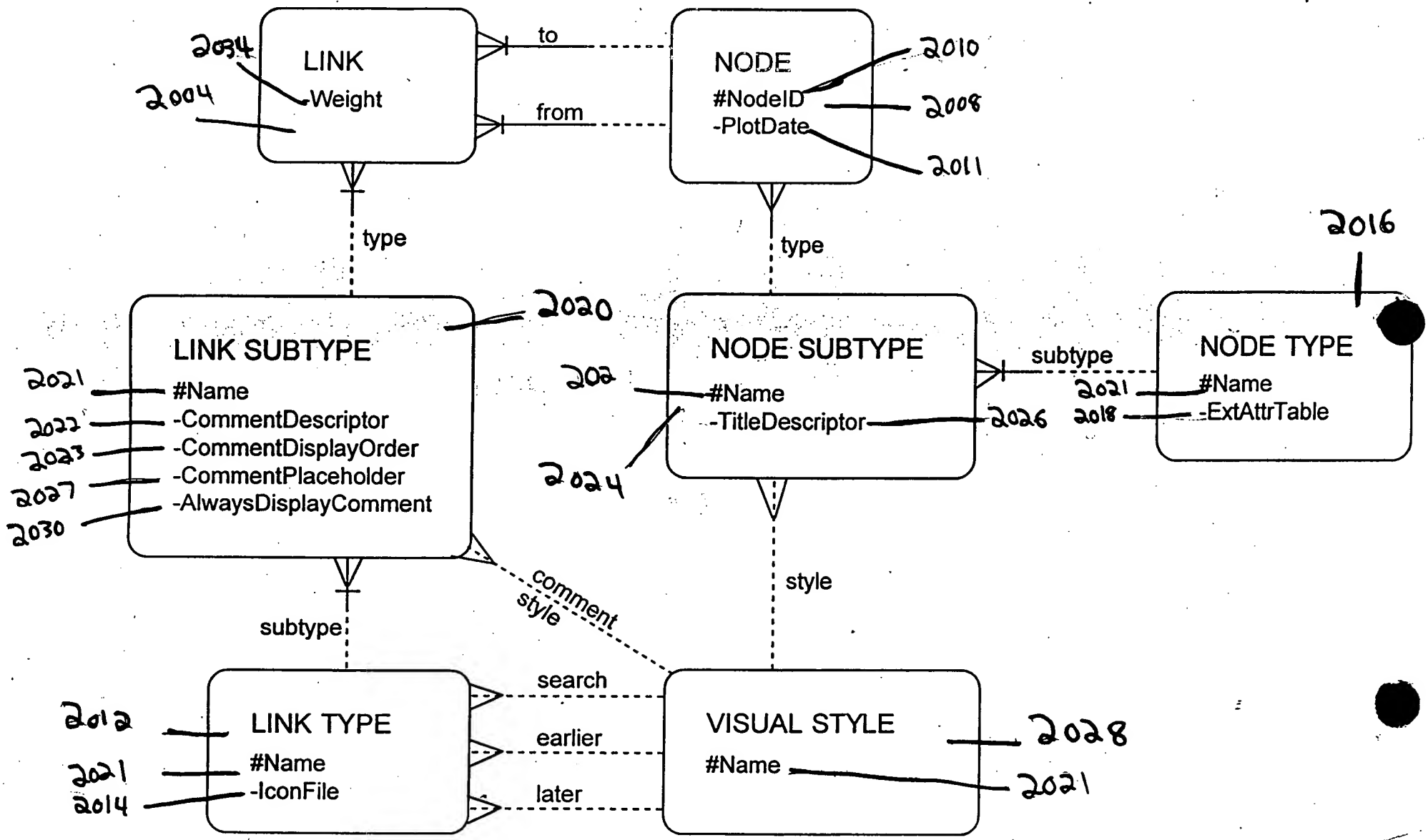

INITIALIZE CORE ENGLISH WORDS
140
144
CREATE pxw BOOLEAN INDEX MATRIX
INITIAL EXTRACTOR
148
POOL PATTERNER
152
POOL WEAVER
156
POOL SECTIONER
160
SECTION EXTRACTOR
128
SECTION PATTERNER
132
SECTION WEAVER
136

FIG. 3D

FIG 3E



6,930,304

Cluster Link Algorithm Update

Technical Note
February 2, 1996

Overview

This document describes the implementation of the cluster link algorithm that is currently being used in V-Search.

Consider a set of nodes N_0 ... N_3 connected by a sequence of direct links whose weights are given by W_1 .. W_3, as shown in Figure 1.

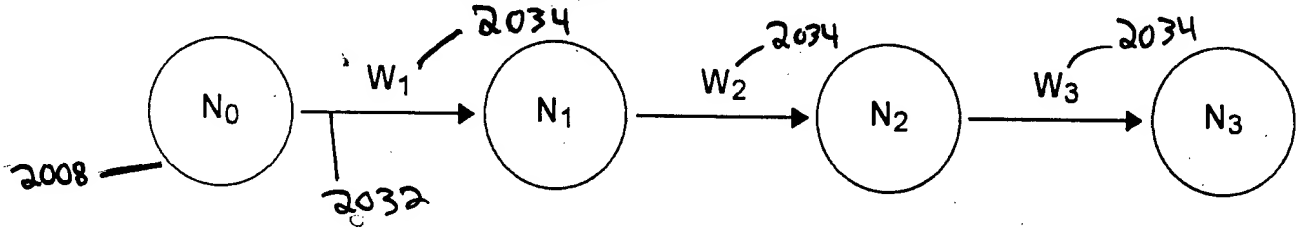
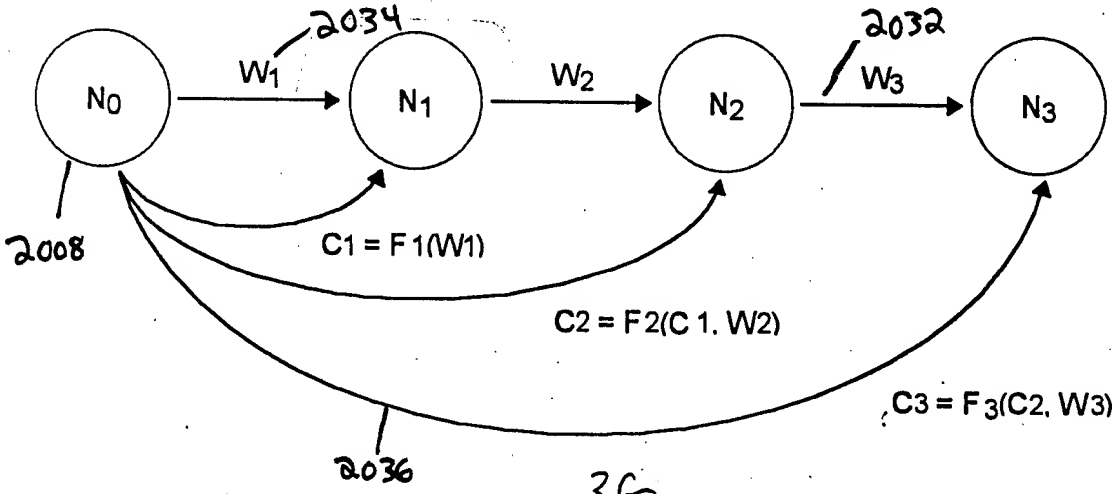


Figure ~~1: Direct Links~~ 3F

Node N_1 is reachable from N_0 through a path of length 1 (that is, $N_0 \rightarrow N_1$); node N_2 is reachable through a path of length 2 ($N_0 \rightarrow N_1 \rightarrow N_2$); and so on.

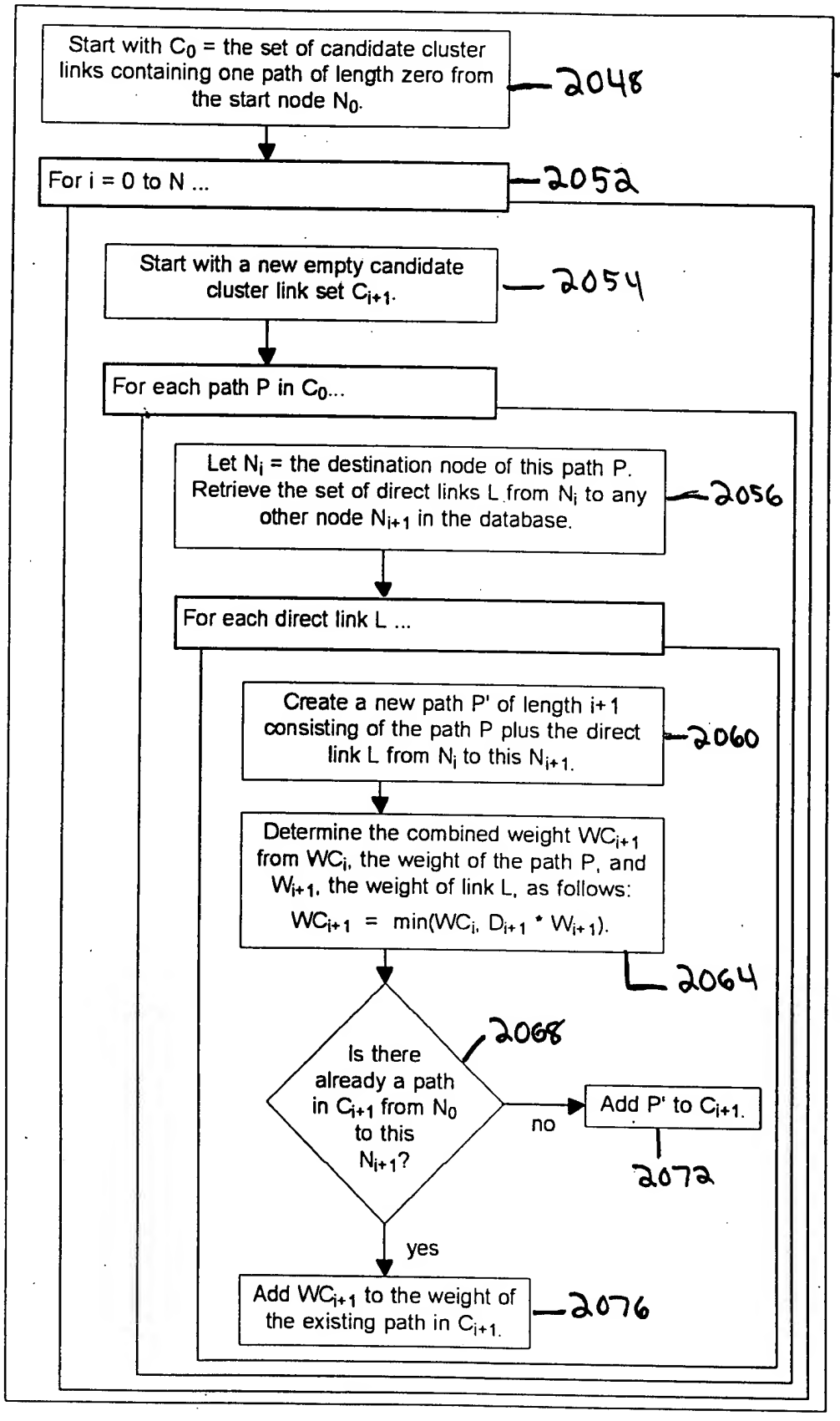
Each path provides some evidence that the start node (N_0) and destination node (N_1, N_2, or N_3) are related to some extent. The strength of the implied relationship depends on the length of the path, and on the weights of the individual direct links along that path.

In Figure 2, the implied relationships from N_0 to N_1, N_2, and N_3 are shown as arcs.



3G

Figure ~~2: Implied Links~~


2044
Start with C_0 = the set of candidate cluster links containing one path of length zero from the start node N_0.
2048
For i = 0 to N ...
2052
Start with a new empty candidate cluster link set C_{i+1}.
2054
For each path P in C_0...
Let N_i = the destination node of this path P. Retrieve the set of direct links L from N_i to any other node N_{i+1} in the database.
2056
For each direct link L ...
Create a new path P' of length i+1 consisting of the path P plus the direct link L from N_i to this N_{i+1}.
2060
Determine the combined weight WC_{i+1} from WC_i, the weight of the path P, and W_{i+1}, the weight of link L, as follows:
$WC_{i+1} = \min(WC_i, D_{i+1} * W_{i+1})$.
2064
Is there already a path in C_{i+1} from N_0 to this N_{i+1}?
2068
no
Add P' to C_{i+1}.
2072
yes
Add WC_{i+1} to the weight of the existing path in C_{i+1}.
2076

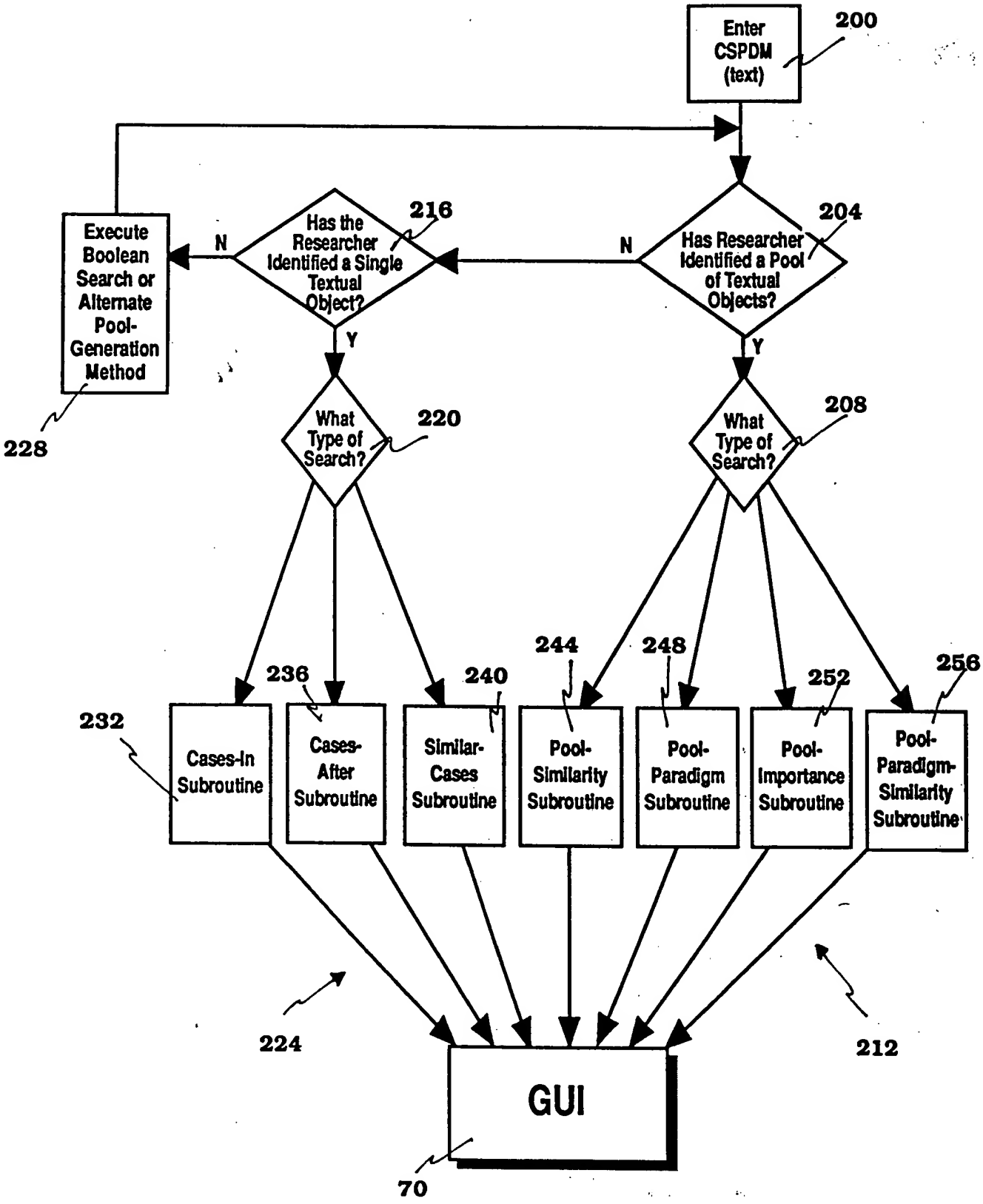

Enter CSPDM (text)
200
Has Researcher Identified a Pool of Textual Objects?
204
N
Y
Has the Researcher Identified a Single Textual Object?
216
N
Y
Execute Boolean Search or Alternate Pool-Generation Method
228
What Type of Search?
208
What Type of Search?
220
Cases-In Subroutine
232
Cases-After Subroutine
236
Similar-Cases Subroutine
240
Pool-Similarity Subroutine
244
Pool-Paradigm Subroutine
248
Pool-Importance Subroutine
252
Pool-Paradigm-Similarity Subroutine
256
224
212
GUI
70

FIG. 4A

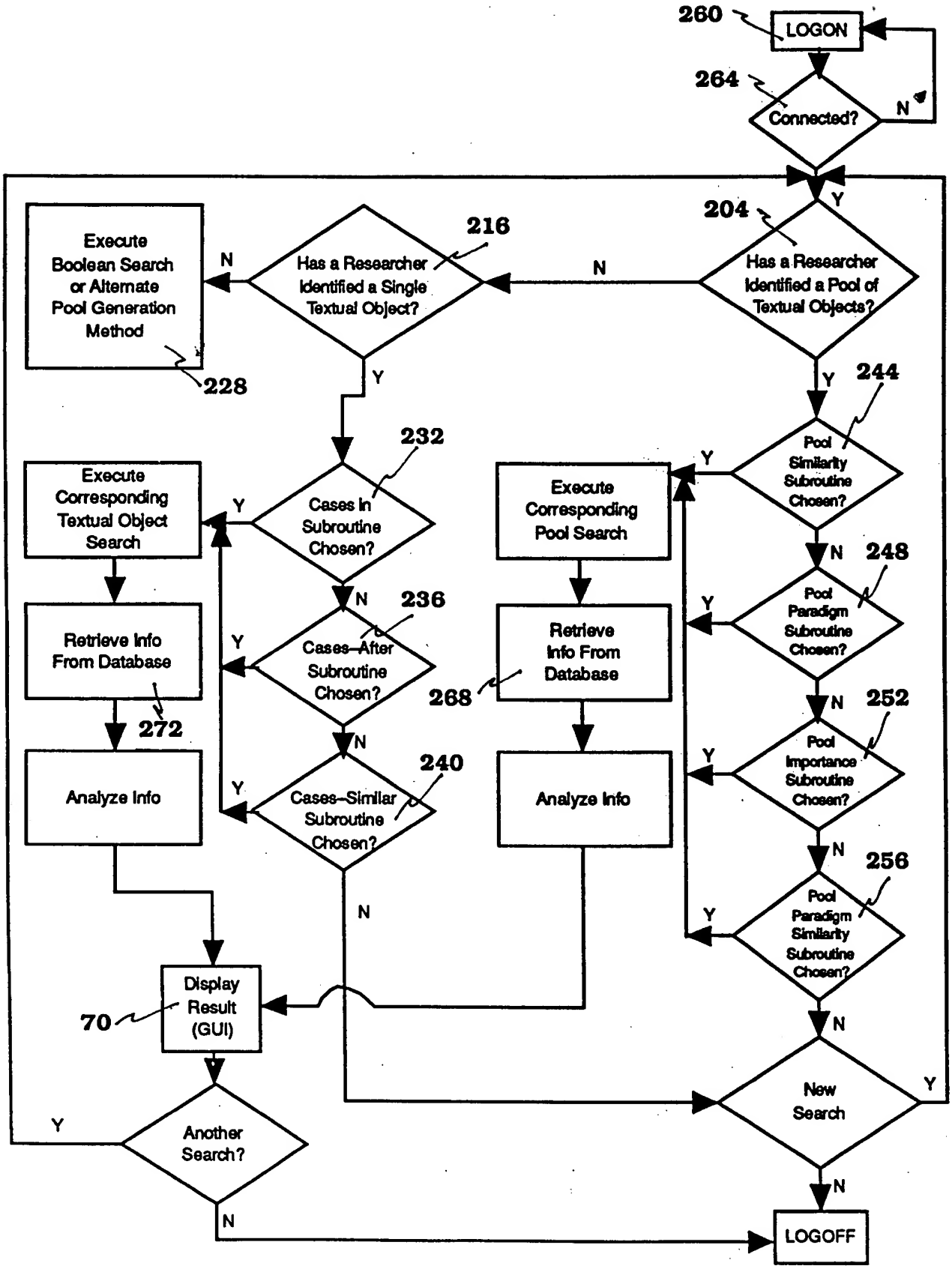

260
LOGON
264
Connected?
N
Y
204
Has a Researcher Identified a Pool of Textual Objects?
N
216
Has a Researcher Identified a Single Textual Object?
N
Execute Boolean Search or Alternate Pool Generation Method
228
Y
244
Pool Similarity Subroutine Chosen?
Y
N
248
Pool Paradigm Subroutine Chosen?
Y
N
252
Pool Importance Subroutine Chosen?
Y
N
256
Pool Paradigm Similarity Subroutine Chosen?
Y
N
Execute Corresponding Pool Search
Retrieve Info From Database
268
Analyze Info
232
Cases In Subroutine Chosen?
Y
N
Execute Corresponding Textual Object Search
Retrieve Info From Database
272
Analyze Info
236
Cases–After Subroutine Chosen?
Y
N
240
Cases–Similar Subroutine Chosen?
Y
N
Display Result (GUI)
70
New Search
Y
N
Another Search?
Y
N
LOGOFF

FIG. 4B

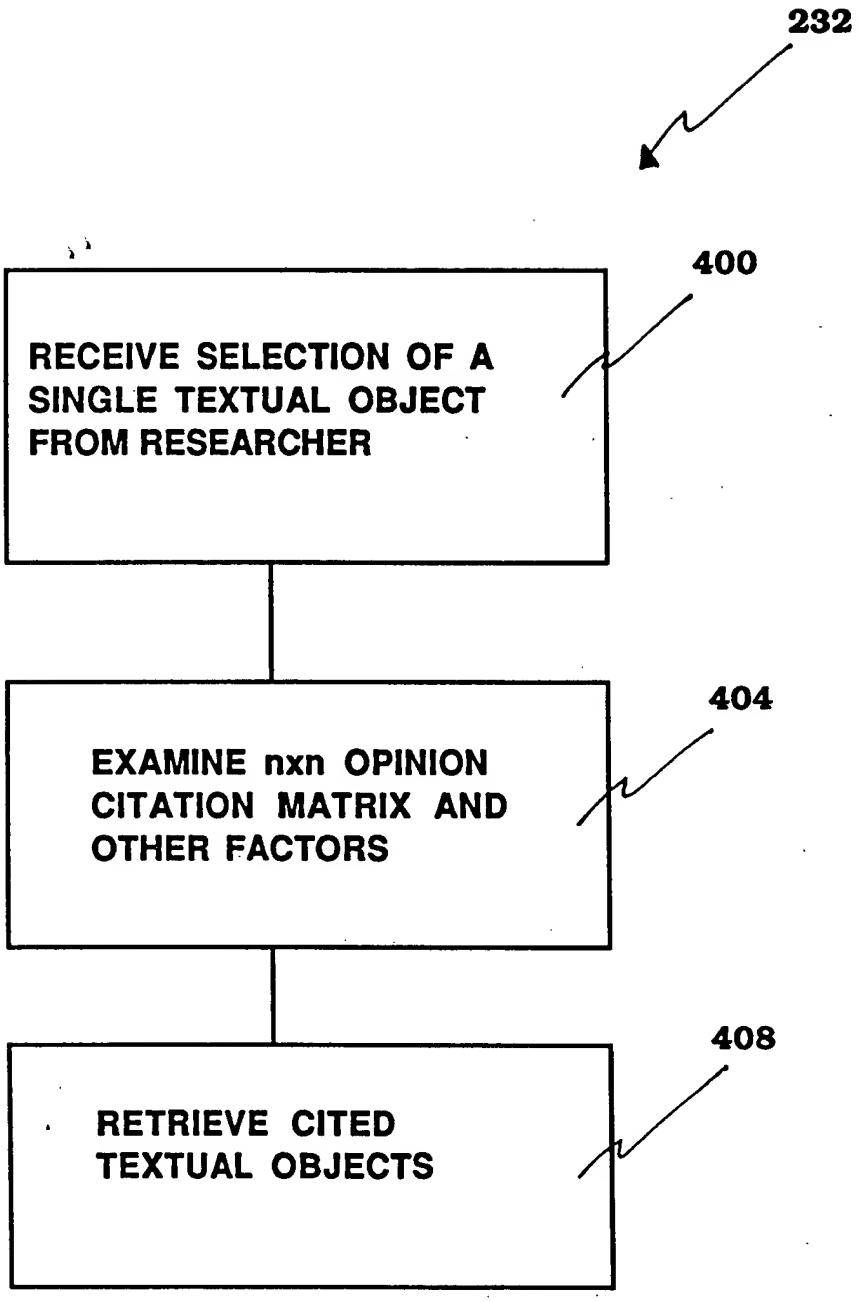

232
400
RECEIVE SELECTION OF A SINGLE TEXTUAL OBJECT FROM RESEARCHER
404
EXAMINE nxn OPINION CITATION MATRIX AND OTHER FACTORS
408
RETRIEVE CITED TEXTUAL OBJECTS

FIG. 4C

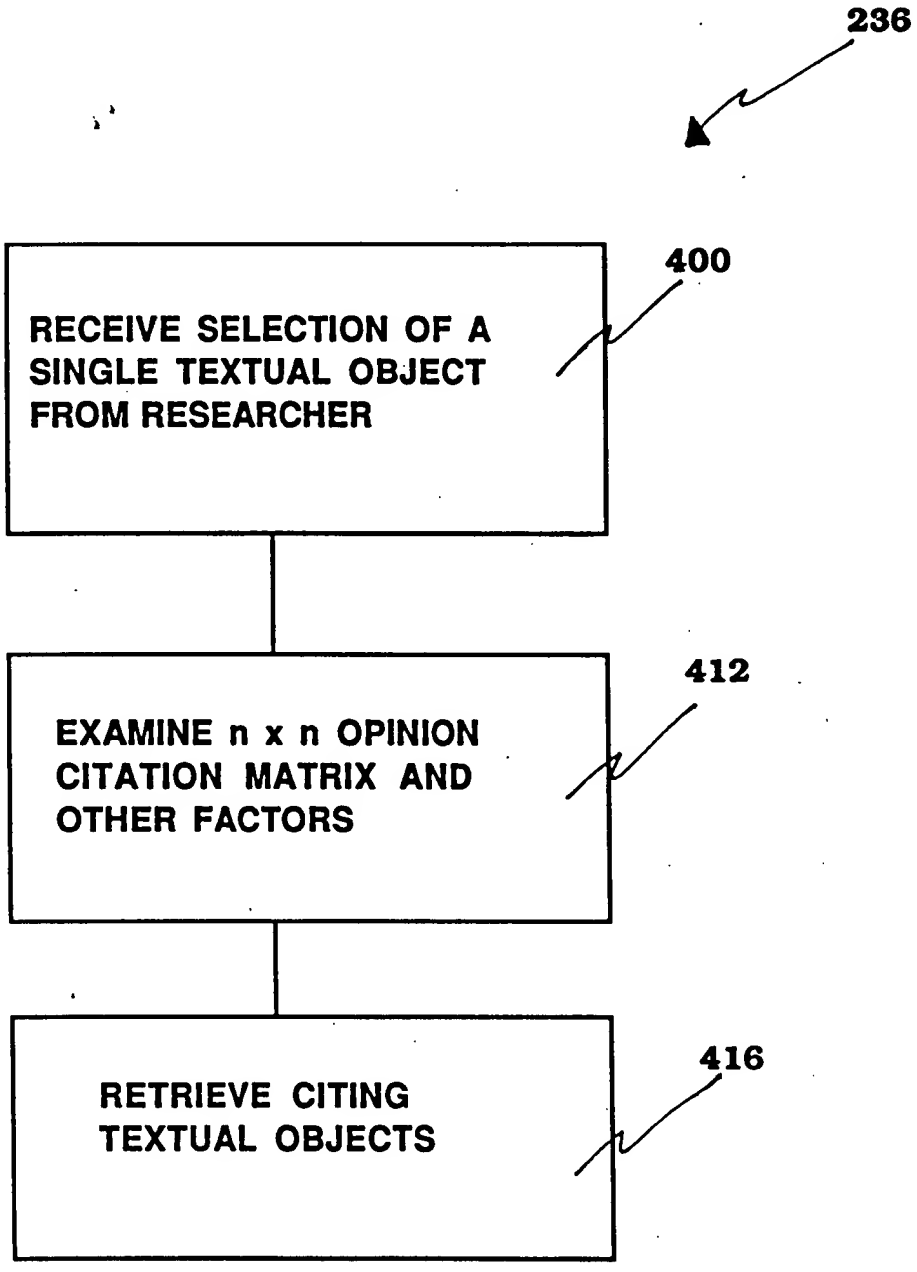

236
400
RECEIVE SELECTION OF A SINGLE TEXTUAL OBJECT FROM RESEARCHER
412
EXAMINE n x n OPINION CITATION MATRIX AND OTHER FACTORS
416
RETRIEVE CITING TEXTUAL OBJECTS

FIG. 4D

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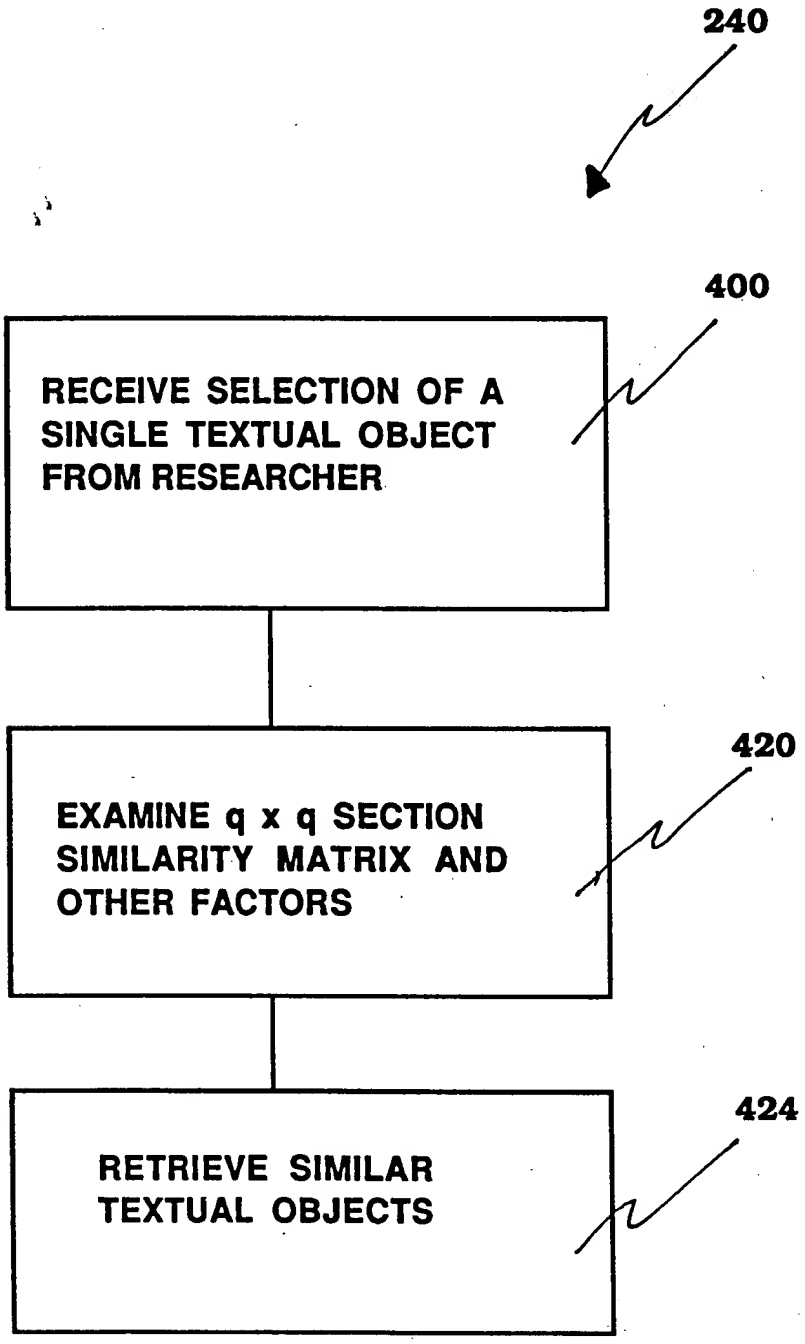


FIG. 4E

08 649304

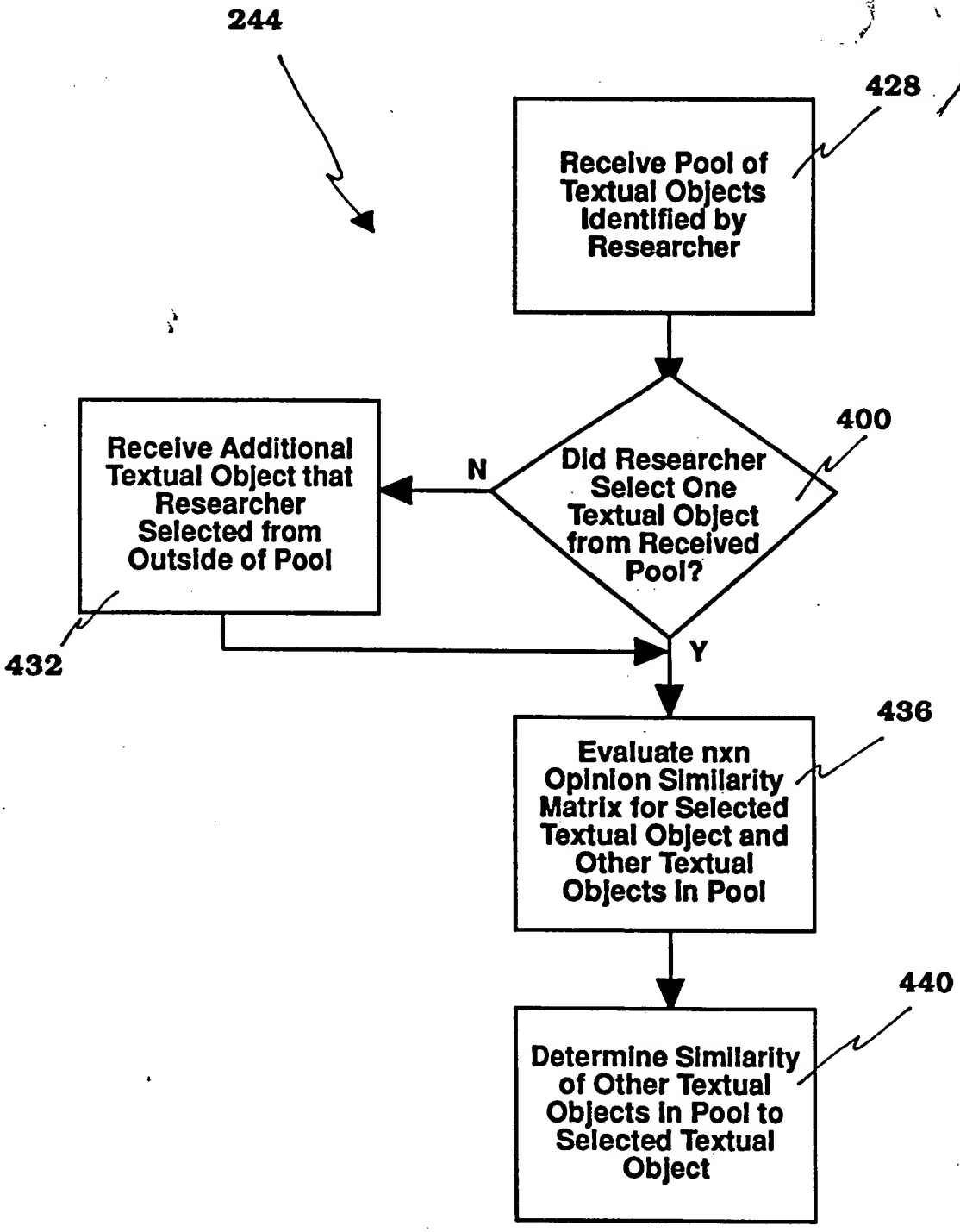


FIG. 4F

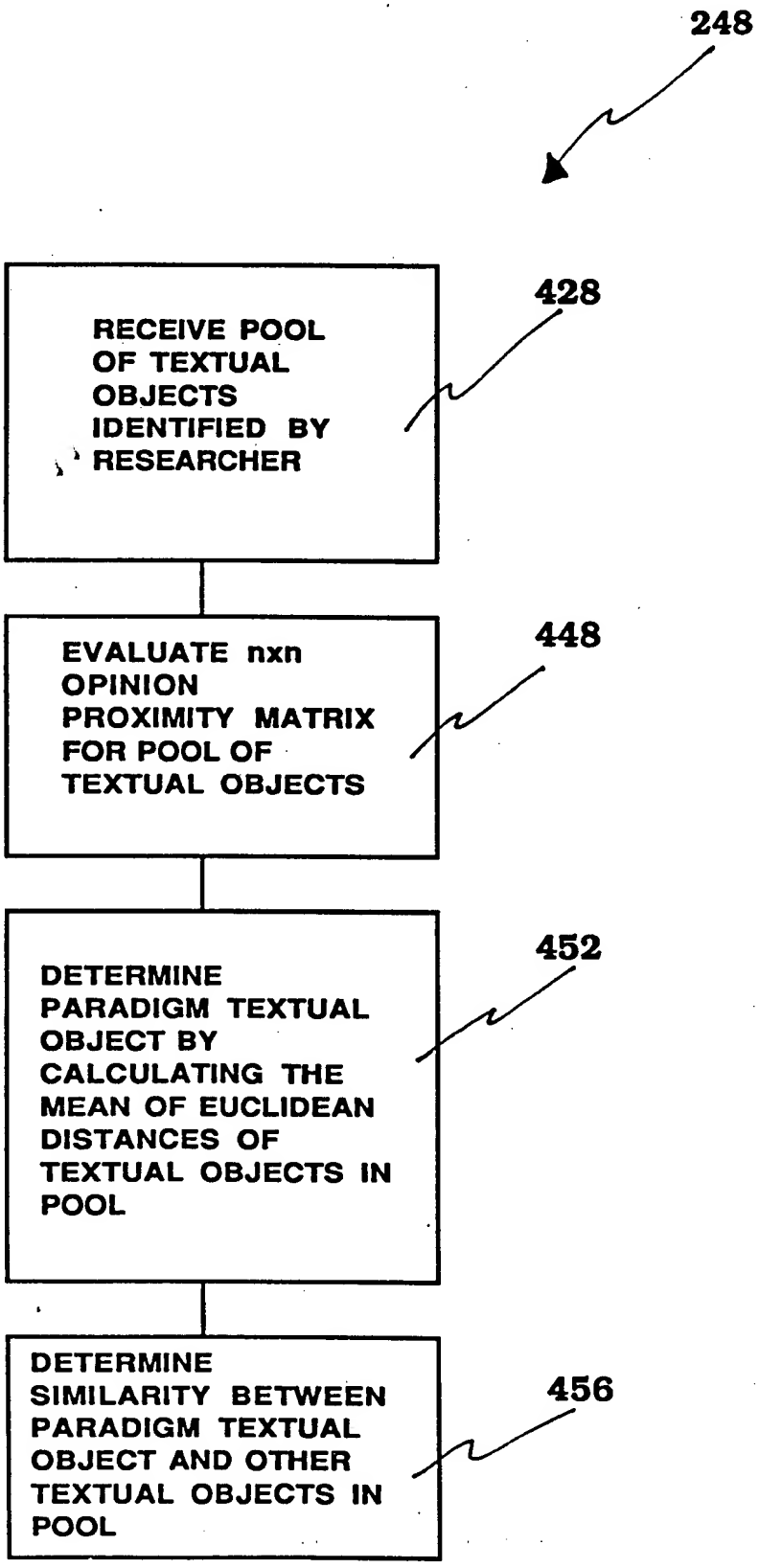

248
RECEIVE POOL OF TEXTUAL OBJECTS IDENTIFIED BY RESEARCHER
428
EVALUATE nxn OPINION PROXIMITY MATRIX FOR POOL OF TEXTUAL OBJECTS
448
DETERMINE PARADIGM TEXTUAL OBJECT BY CALCULATING THE MEAN OF EUCLIDEAN DISTANCES OF TEXTUAL OBJECTS IN POOL
452
DETERMINE SIMILARITY BETWEEN PARADIGM TEXTUAL OBJECT AND OTHER TEXTUAL OBJECTS IN POOL
456

FIG. 4G

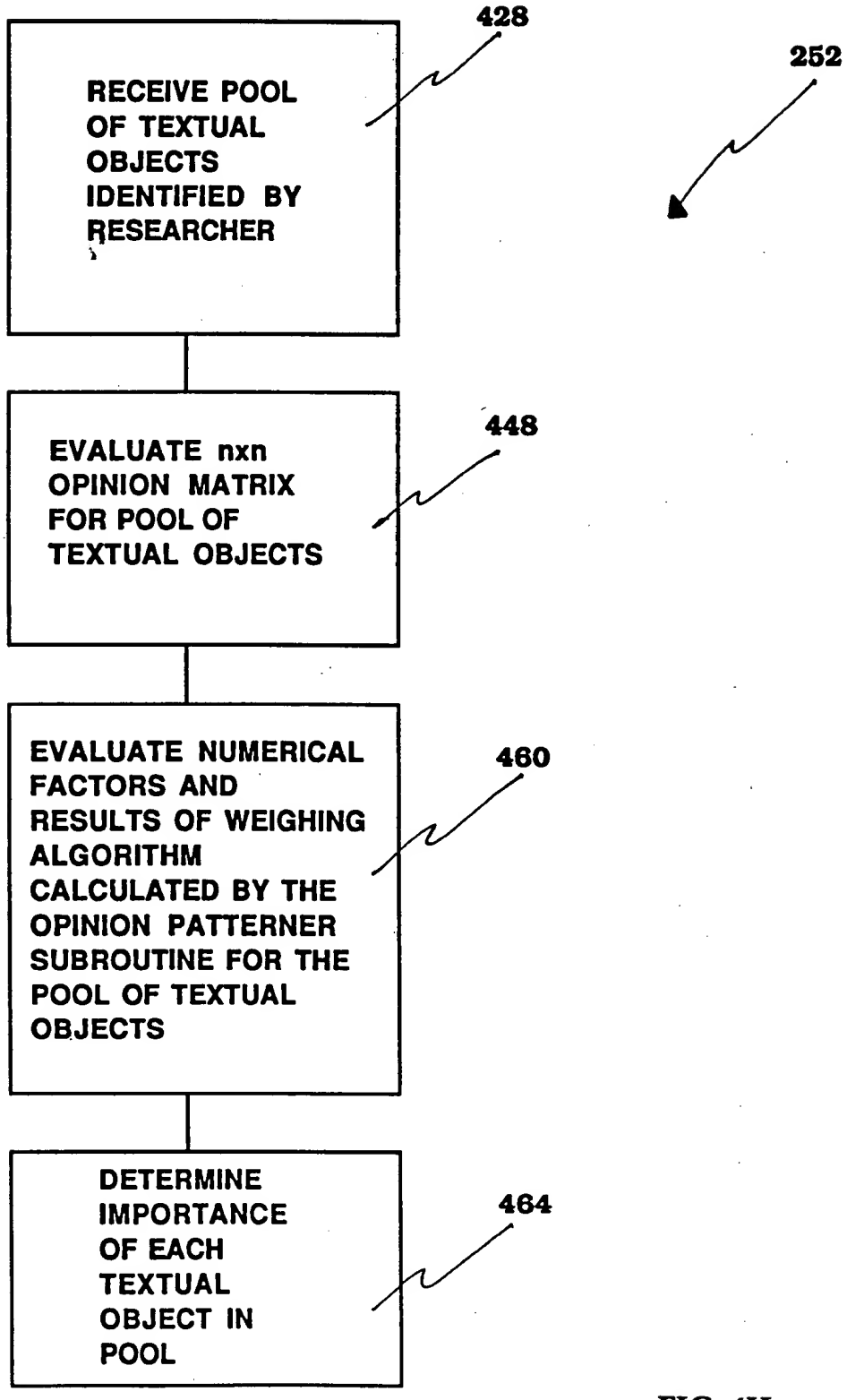

428
252
RECEIVE POOL OF TEXTUAL OBJECTS IDENTIFIED BY RESEARCHER
448
EVALUATE nxn OPINION MATRIX FOR POOL OF TEXTUAL OBJECTS
460
EVALUATE NUMERICAL FACTORS AND RESULTS OF WEIGHING ALGORITHM CALCULATED BY THE OPINION PATTERNER SUBROUTINE FOR THE POOL OF TEXTUAL OBJECTS
464
DETERMINE IMPORTANCE OF EACH TEXTUAL OBJECT IN POOL

FIG. 4H

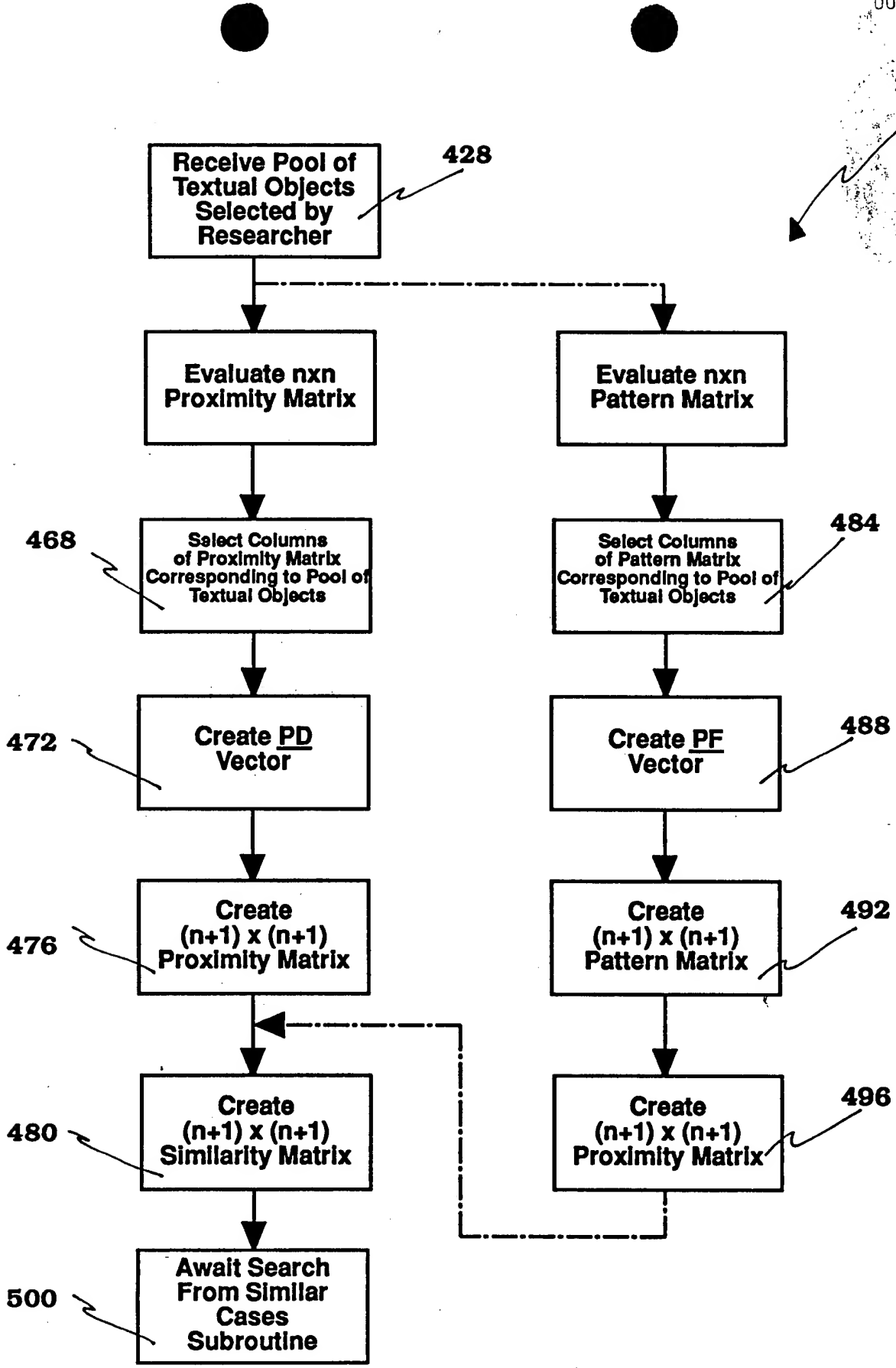

256
Receive Pool of Textual Objects Selected by Researcher
428
Evaluate nxn Proximity Matrix
Evaluate nxn Pattern Matrix
468
Select Columns of Proximity Matrix Corresponding to Pool of Textual Objects
Select Columns of Pattern Matrix Corresponding to Pool of Textual Objects
484
472
Create PD Vector
Create PF Vector
488
476
Create (n+1) x (n+1) Proximity Matrix
Create (n+1) x (n+1) Pattern Matrix
492
480
Create (n+1) x (n+1) Similarity Matrix
Create (n+1) x (n+1) Proximity Matrix
496
500
Await Search From Similar Cases Subroutine

FIG. 4I

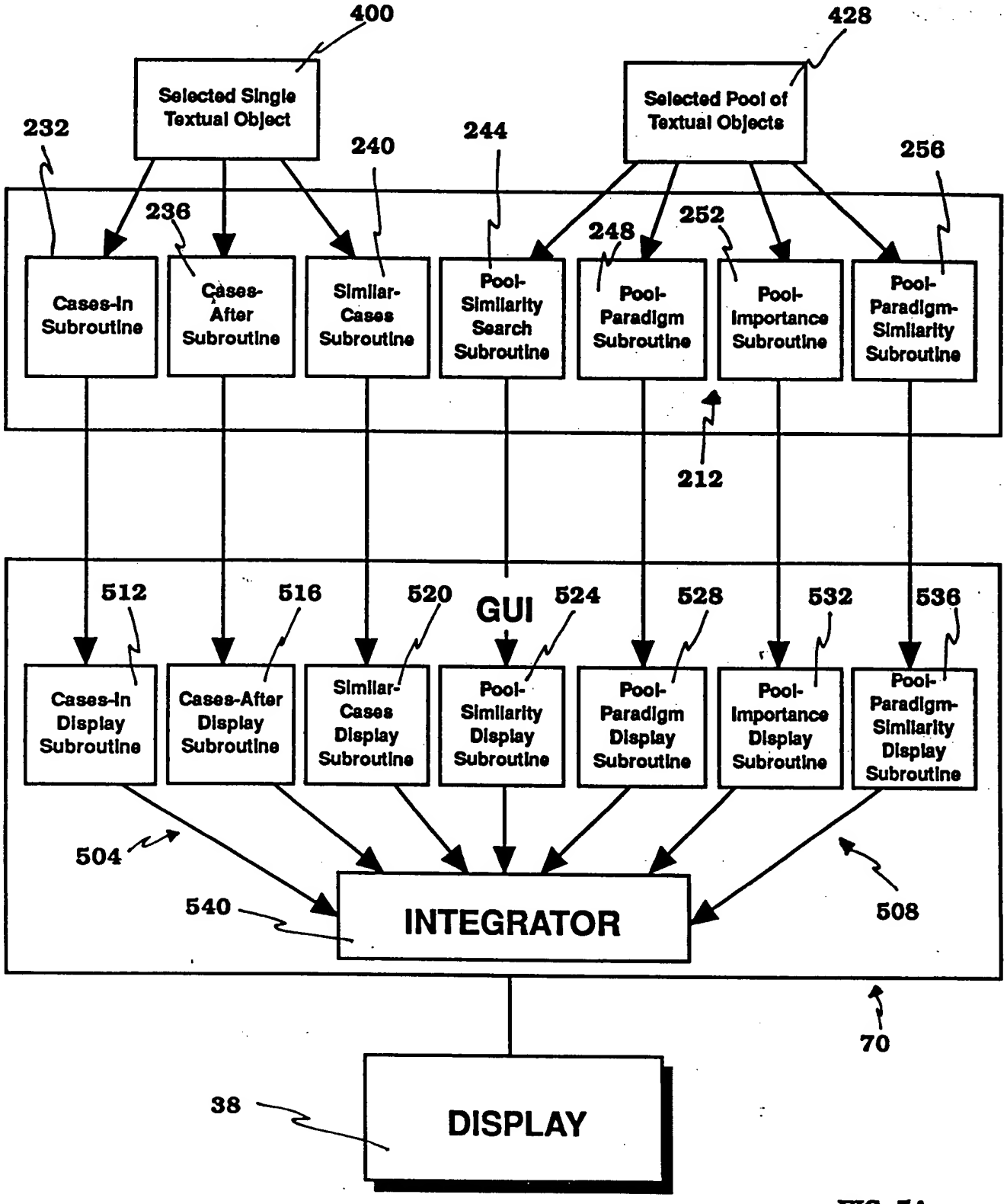
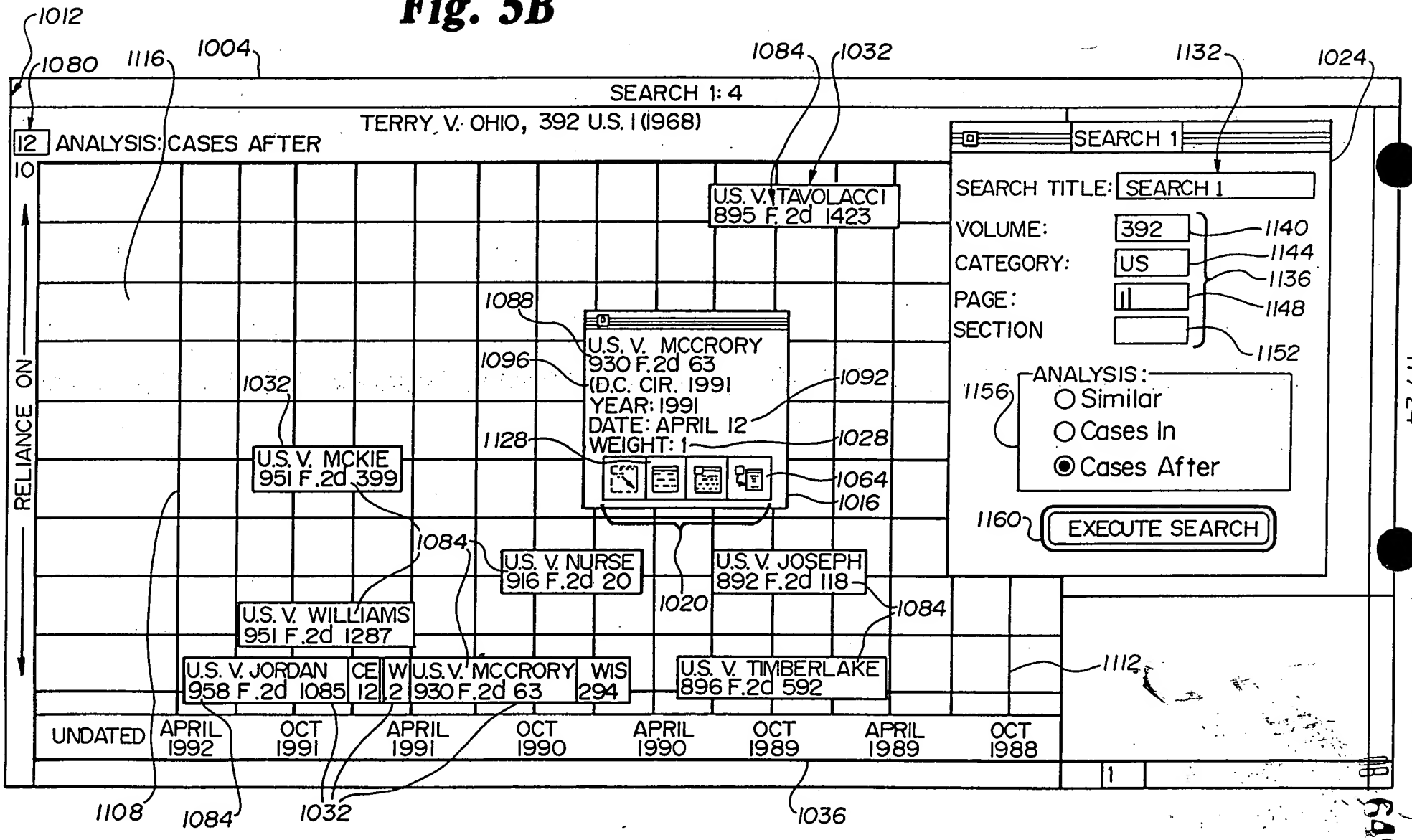

400
Selected Single Textual Object
428
Selected Pool of Textual Objects
232
240
244
256
236
248
252
Cases-In Subroutine
Cases-After Subroutine
Similar-Cases Subroutine
Pool-Similarity Search Subroutine
Pool-Paradigm Subroutine
Pool-Importance Subroutine
Pool-Paradigm-Similarity Subroutine
212
512
516
520
GUI
524
528
532
536
Cases-In Display Subroutine
Cases-After Display Subroutine
Similar-Cases Display Subroutine
Pool-Similarity Display Subroutine
Pool-Paradigm Display Subroutine
Pool-Importance Display Subroutine
Pool-Paradigm-Similarity Display Subroutine
504
540
INTEGRATOR
508
70
38
DISPLAY

FIG. 5A

Fig. 5B


1012
1080
1116
1004
1084
1032
1132
1024
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TERRY V. OHIO, 392 U.S. 1 (1968)
12 ANALYSIS: CASES AFTER
10
RELIANCE ON
U.S. V. TAVOLACCI
895 F. 2d 1423
SEARCH 1
SEARCH TITLE: SEARCH 1
VOLUME: 392
CATEGORY: US
PAGE: 1
SECTION
1140
1144
1136
1148
1152
ANALYSIS:
Similar
Cases In
Cases After
1156
1160
EXECUTE SEARCH
1088
U.S. V. MCCRORY
930 F.2d 63
(D.C. CIR. 1991
YEAR: 1991
DATE: APRIL 12
WEIGHT: 1
1096
1092
1128
1028
1064
1016
1032
U.S. V. MCKIE
951 F.2d 399
1084
U.S. V. NURSE
916 F.2d 20
1020
U.S. V. JOSEPH
892 F.2d 118
1084
U.S. V. WILLIAMS
951 F.2d 1287
U.S. V. JORDAN
958 F.2d 1085
CE 12.2
U.S. V. MCCRORY
930 F.2d 63
WIS 294
U.S. V. TIMBERLAKE
896 F.2d 592
1112
UNDATED
APRIL 1992
OCT 1991
APRIL 1991
OCT 1990
APRIL 1990
OCT 1989
APRIL 1989
OCT 1988
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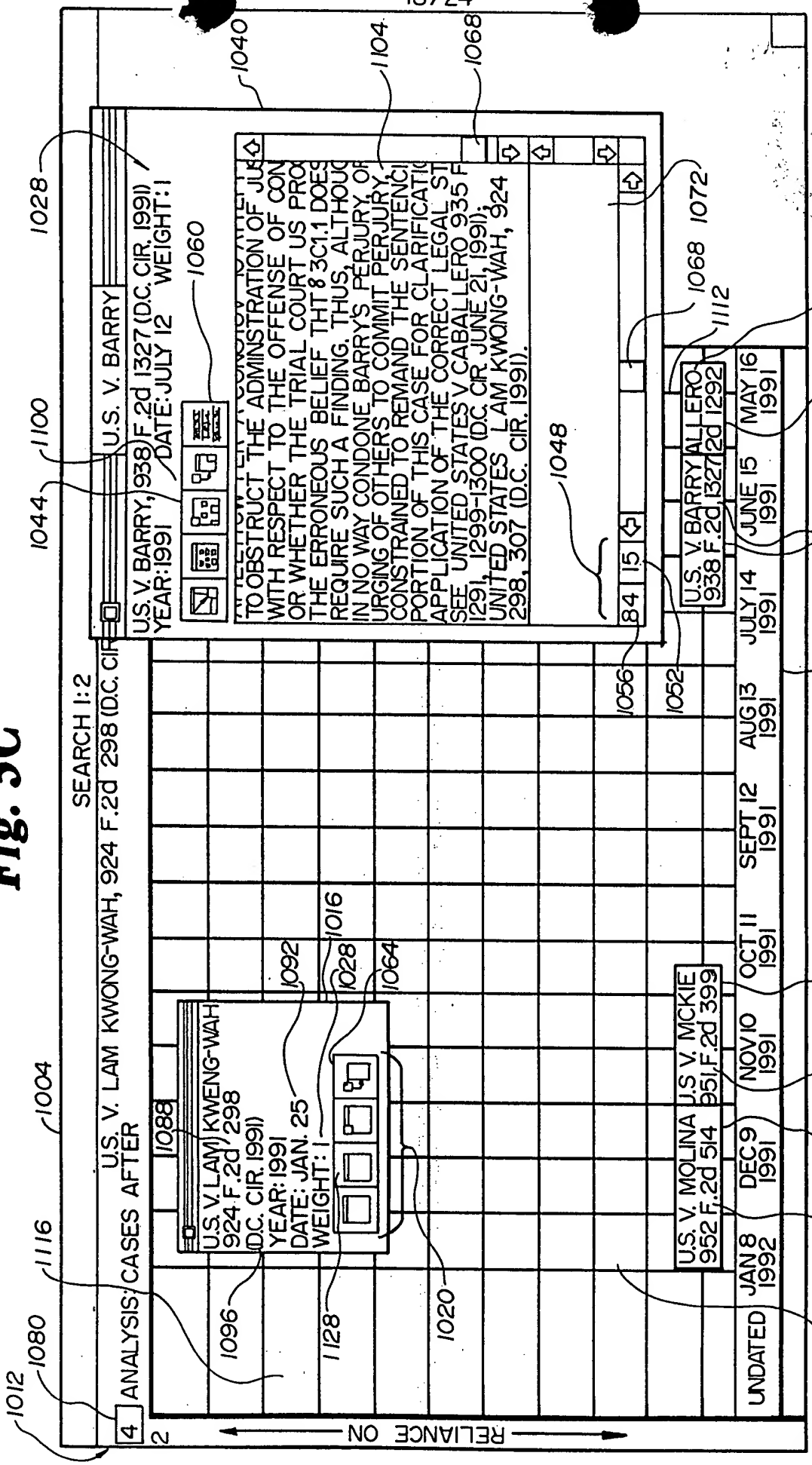
1036
17/24
649304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U.S. V. LAM KWONG-WAH, 924 F.2d 298 (D.C. CIR
ANALYSIS: CASES AFTER
4
2
RELIANCE ON
U.S. V. BARRY
U.S. V. BARRY, 938 F.2d 1327 (D.C. CIR. 1991)
YEAR: 1991
DATE: JULY 12
WEIGHT: 1
U.S. V. LAM KWENG-WAH
924 F.2d 298
(D.C. CIR. 1991)
YEAR: 1991
DATE: JAN. 25
WEIGHT: 1
U.S. V. MOLINA
952 F.2d 514
U.S. V. MCKIE
951 F.2d 399
U.S. V. BARRY
938 F.2d 1327
ALLERO
2d 1292
UNDATED
JAN 8 1992
DEC 9 1991
NOV 10 1991
OCT 11 1991
SEPT 12 1991
AUG 13 1991
JULY 14 1991
JUNE 15 1991
MAY 16 1991
1012
1080
1116
1004
1088
1096
1092
1016
1028
1064
1128
1020
1108
1084
1032
1036
1056
1052
1048
1112
1068
1072
1044
1100
1028
1060
1040
1104
1068

Fig. 5C

Fig. 5D

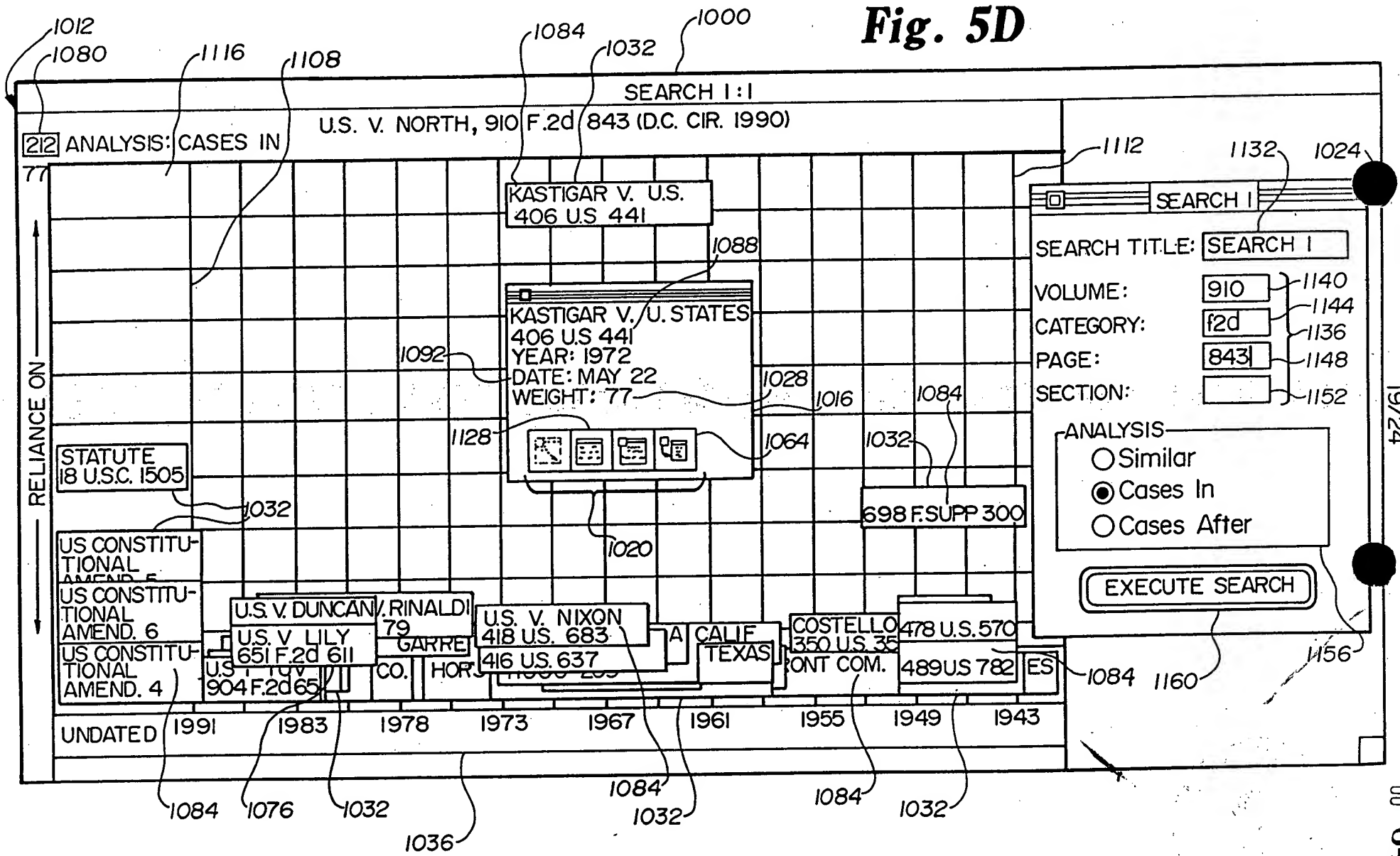

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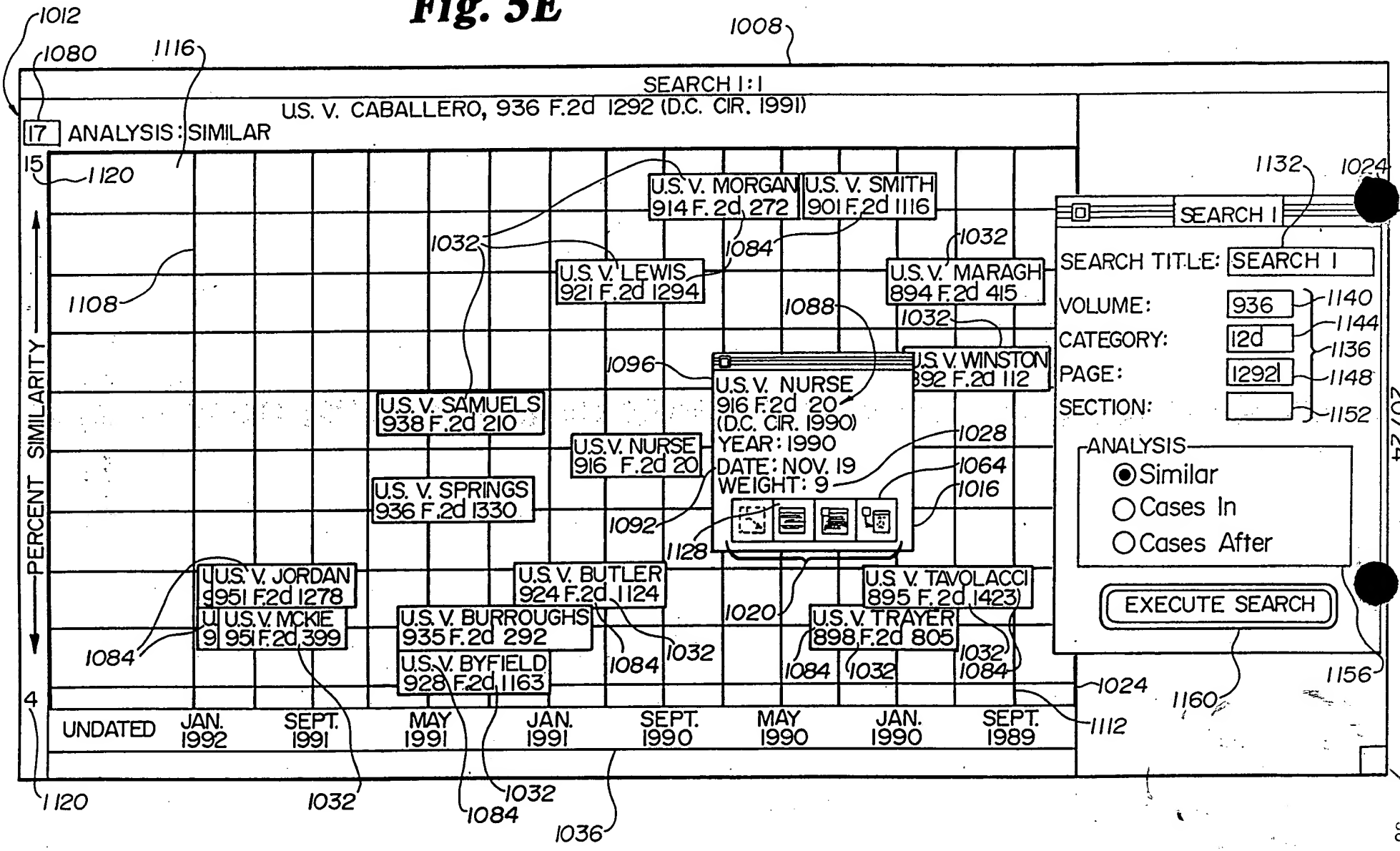
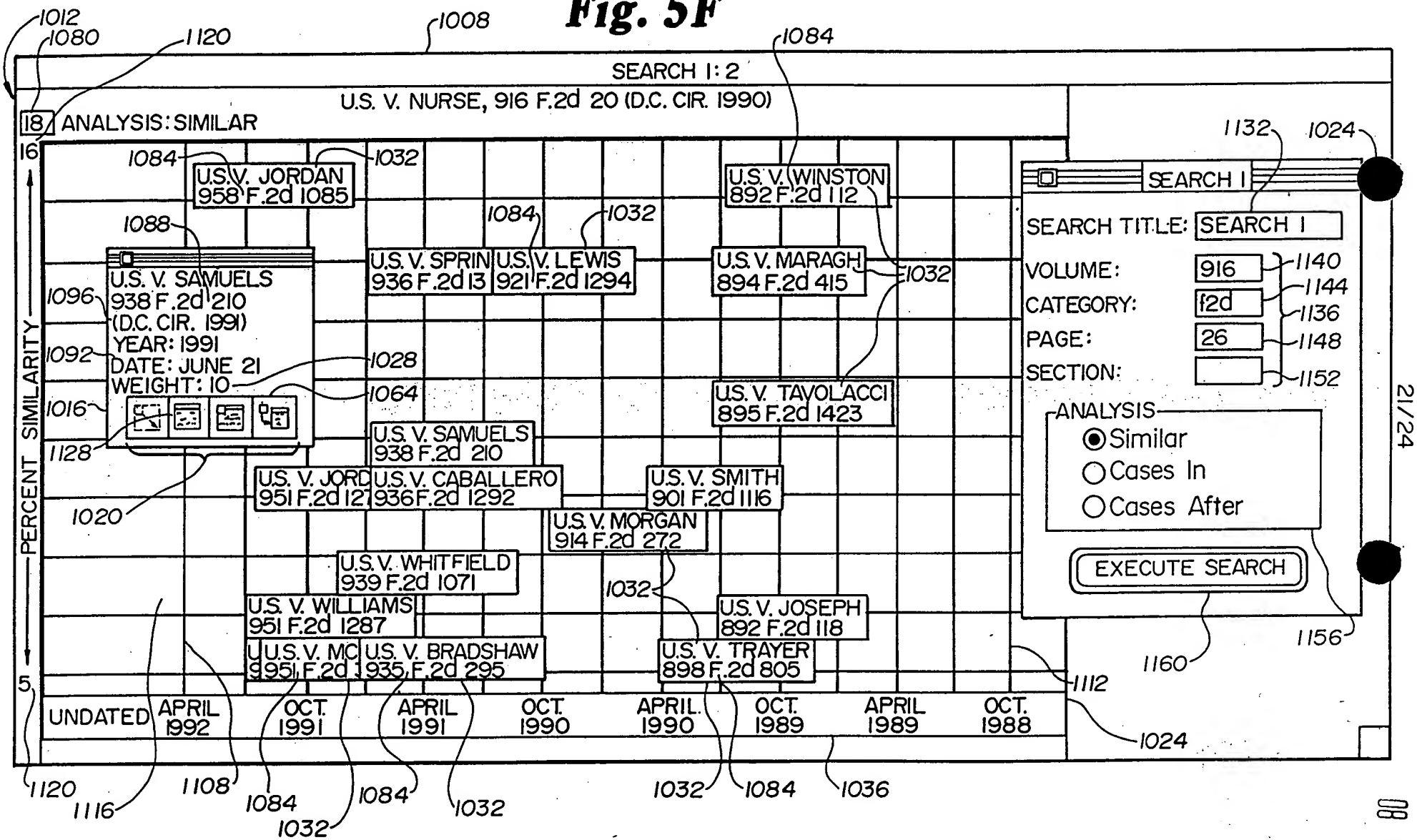
Fig. 5E



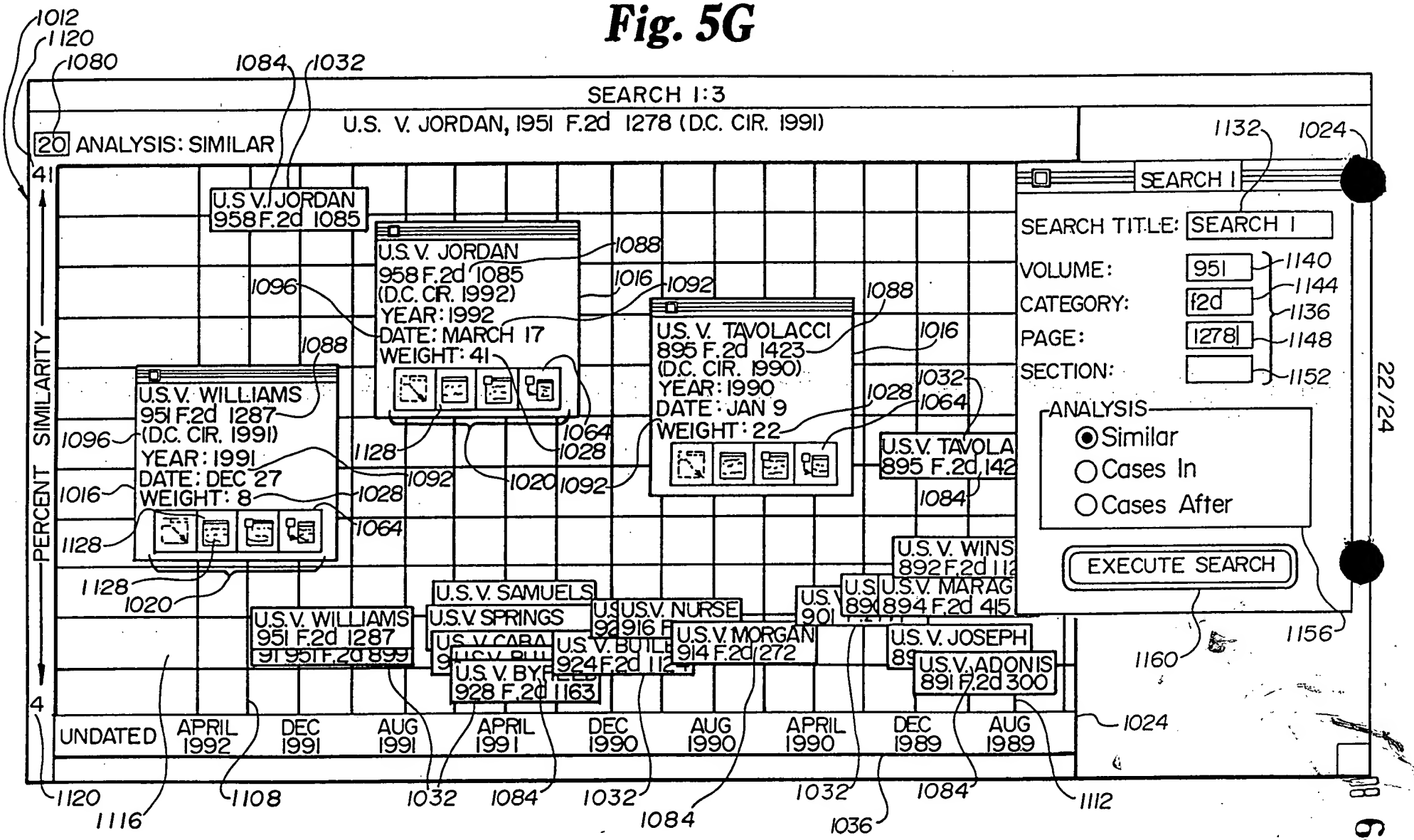
08 649304

Fig. 5F



08 649304

Fig. 5G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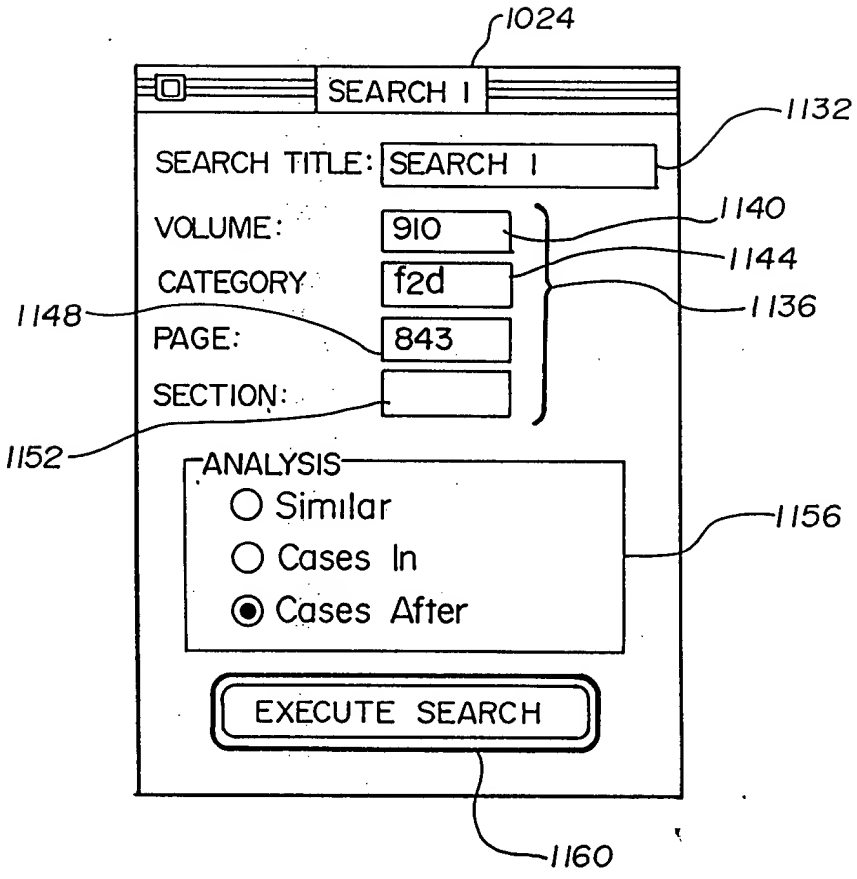
U.S. V. JORDAN, 1951 F.2d 1278 (D.C. CIR. 1991)
20 ANALYSIS: SIMILAR
PERCENT SIMILARITY
41
4
U.S V. JORDAN 958 F.2d 1085
U.S. V. JORDAN 958 F.2d 1085 (D.C. CIR. 1992) YEAR: 1992 DATE: MARCH 17 WEIGHT: 41
U.S. V. TAVOLACCI 895 F.2d 1423 (D.C. CIR. 1990) YEAR: 1990 DATE: JAN 9 WEIGHT: 22
U.S.V. TAVOLA 895 F.2d 142
U.S. V. WILLIAMS 951 F.2d 1287 (D.C. CIR. 1991) YEAR: 1991 DATE: DEC 27 WEIGHT: 8
U.S.V. WILLIAMS 951 F.2d 1287
U.S.V. SAMUELS
U.S.V SPRINGS
U.S.V. NURSE
U.S.V. MORGAN 914 F.2d 272
U.S. V. BUTLER 924 F.2d 112
U.S. V. BYRD 928 F.2d 1163
U.S. V. WINS 892 F.2d 11
U.S.V. MARAG 894 F.2d 415
U.S. V. JOSEPH
U.S.V. ADONIS 891 F.2d 300
UNDATED
APRIL 1992
DEC 1991
AUG 1991
APRIL 1991
DEC 1990
AUG 1990
APRIL 1990
DEC 1989
AUG 1989
SEARCH 1
SEARCH TITLE: SEARCH 1
VOLUME: 951
CATEGORY: f2d
PAGE: 1278
SECTION:
ANALYSIS
Similar
Cases In
Cases After
EXECUTE SEARCH
22/24
649304

08 649304

Fig. 5H



Schematic Representations of the Eighteen Primary Patterns

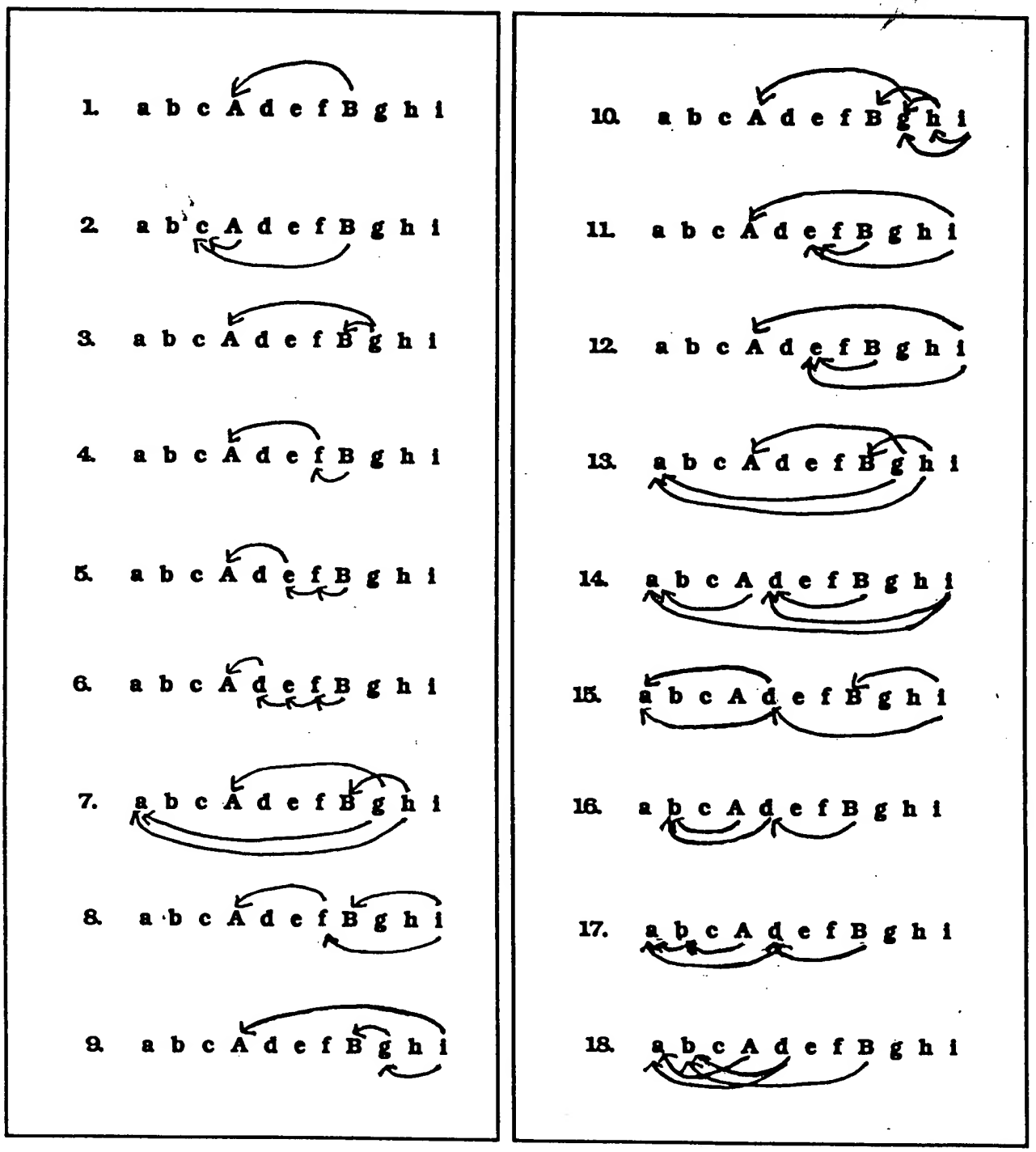


FIG. 6

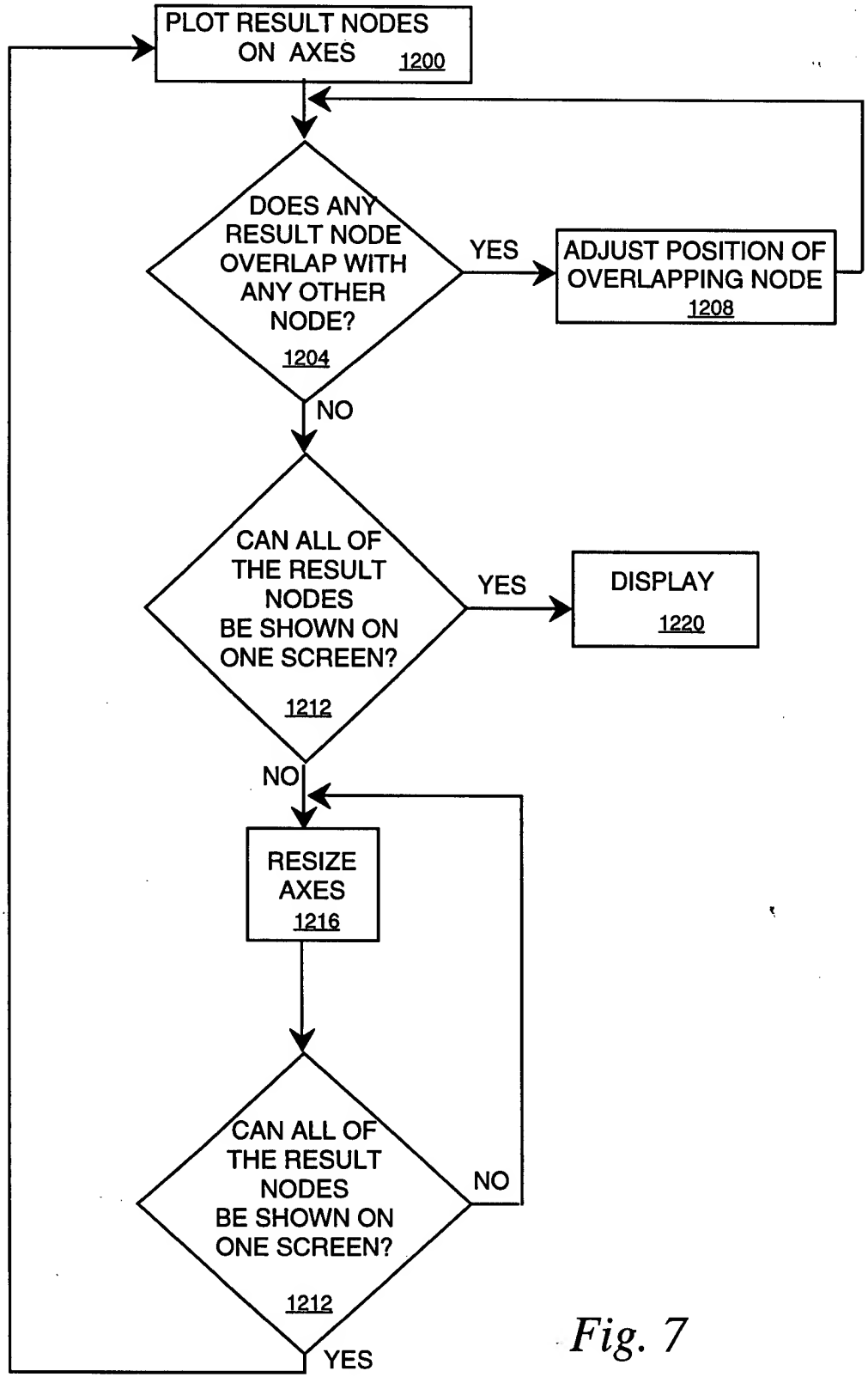
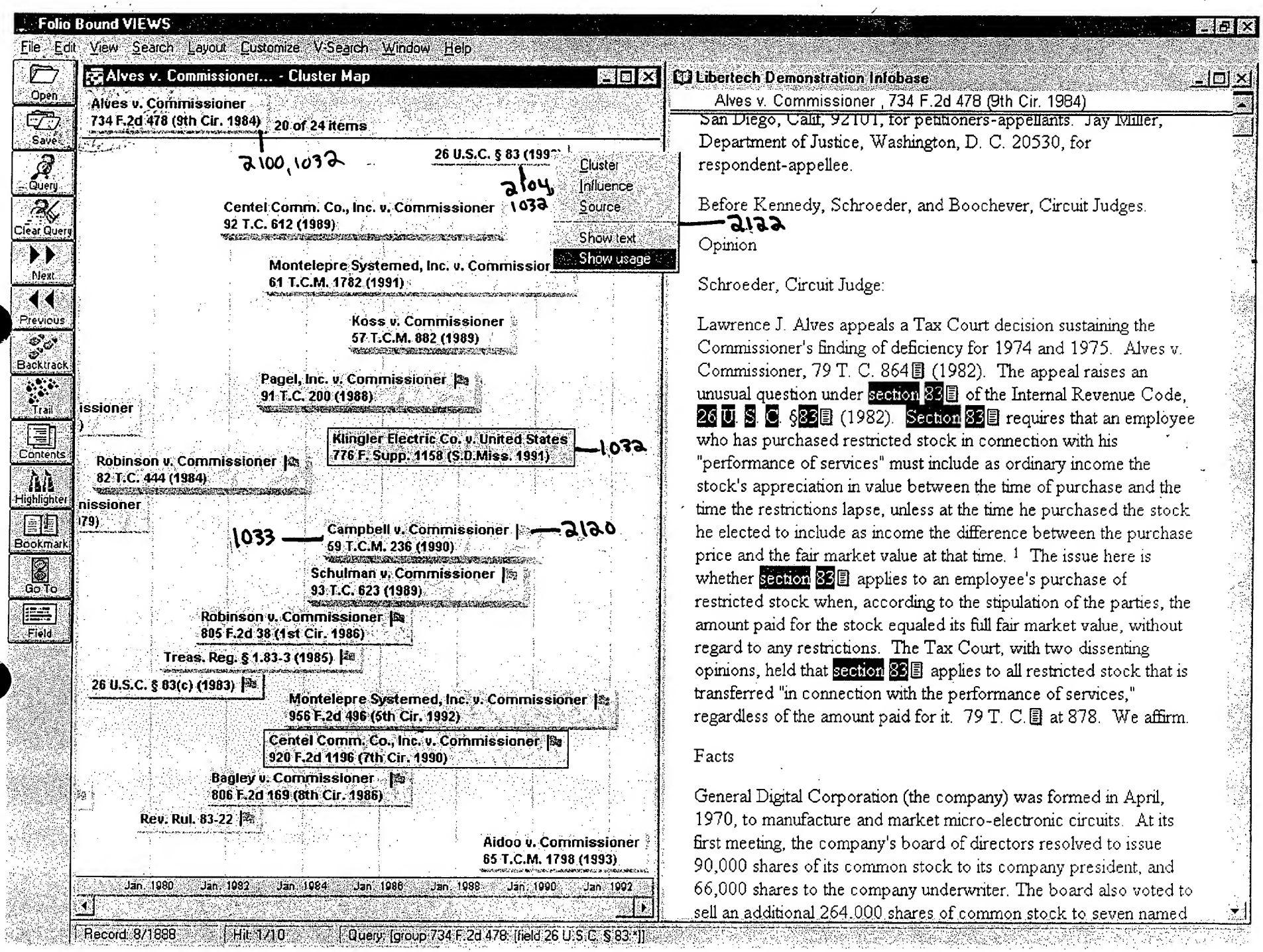

PLOT RESULT NODES ON AXES 1200
DOES ANY RESULT NODE OVERLAP WITH ANY OTHER NODE? 1204
YES
ADJUST POSITION OF OVERLAPPING NODE 1208
NO
CAN ALL OF THE RESULT NODES BE SHOWN ON ONE SCREEN? 1212
YES
DISPLAY 1220
NO
RESIZE AXES 1216
CAN ALL OF THE RESULT NODES BE SHOWN ON ONE SCREEN? 1212
NO
YES

Fig. 7

FIG. 8



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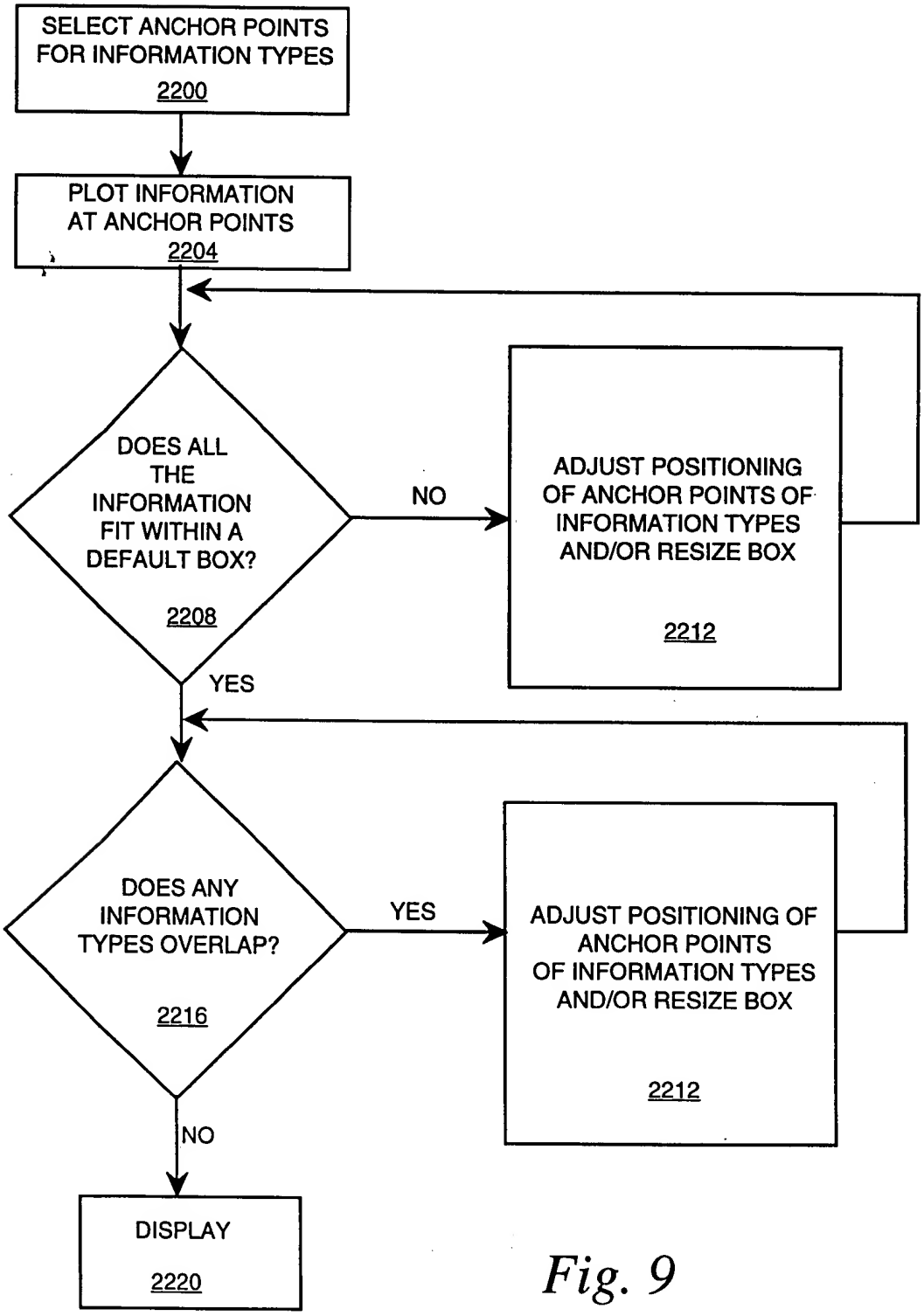
SELECT ANCHOR POINTS FOR INFORMATION TYPES
2200
PLOT INFORMATION AT ANCHOR POINTS
2204
DOES ALL THE INFORMATION FIT WITHIN A DEFAULT BOX?
2208
NO
ADJUST POSITIONING OF ANCHOR POINTS OF INFORMATION TYPES AND/OR RESIZE BOX
2212
YES
DOES ANY INFORMATION TYPES OVERLAP?
2216
YES
ADJUST POSITIONING OF ANCHOR POINTS OF INFORMATION TYPES AND/OR RESIZE BOX
2212
NO
DISPLAY
2220

Fig. 9

FIG. 10A

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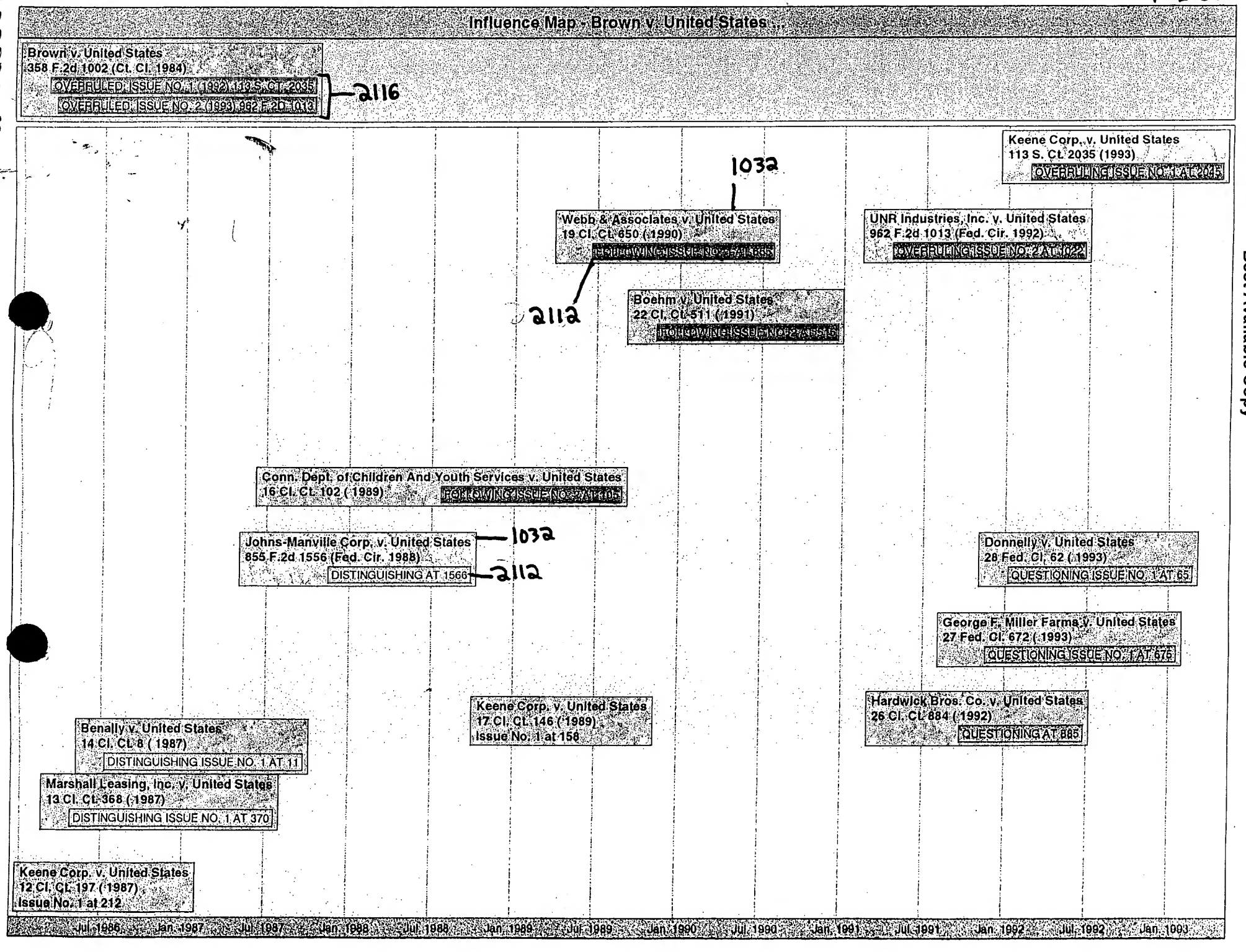

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Fit 6403 84

Source Map - Terry v. Ohio 292 U.S. 1 (1968)

Terry v. Ohio
292 U.S. 1 (1968)

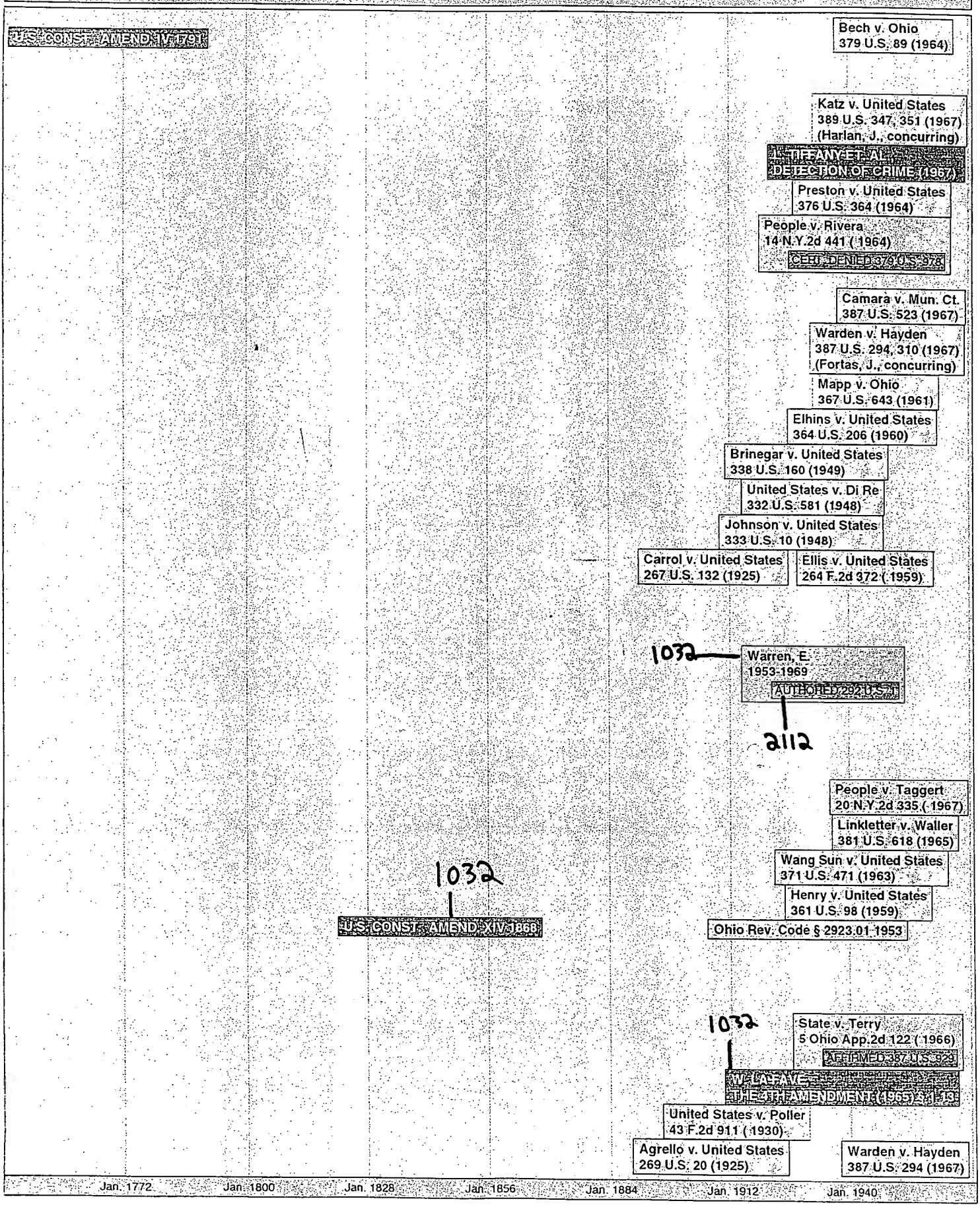

FIG. 10C

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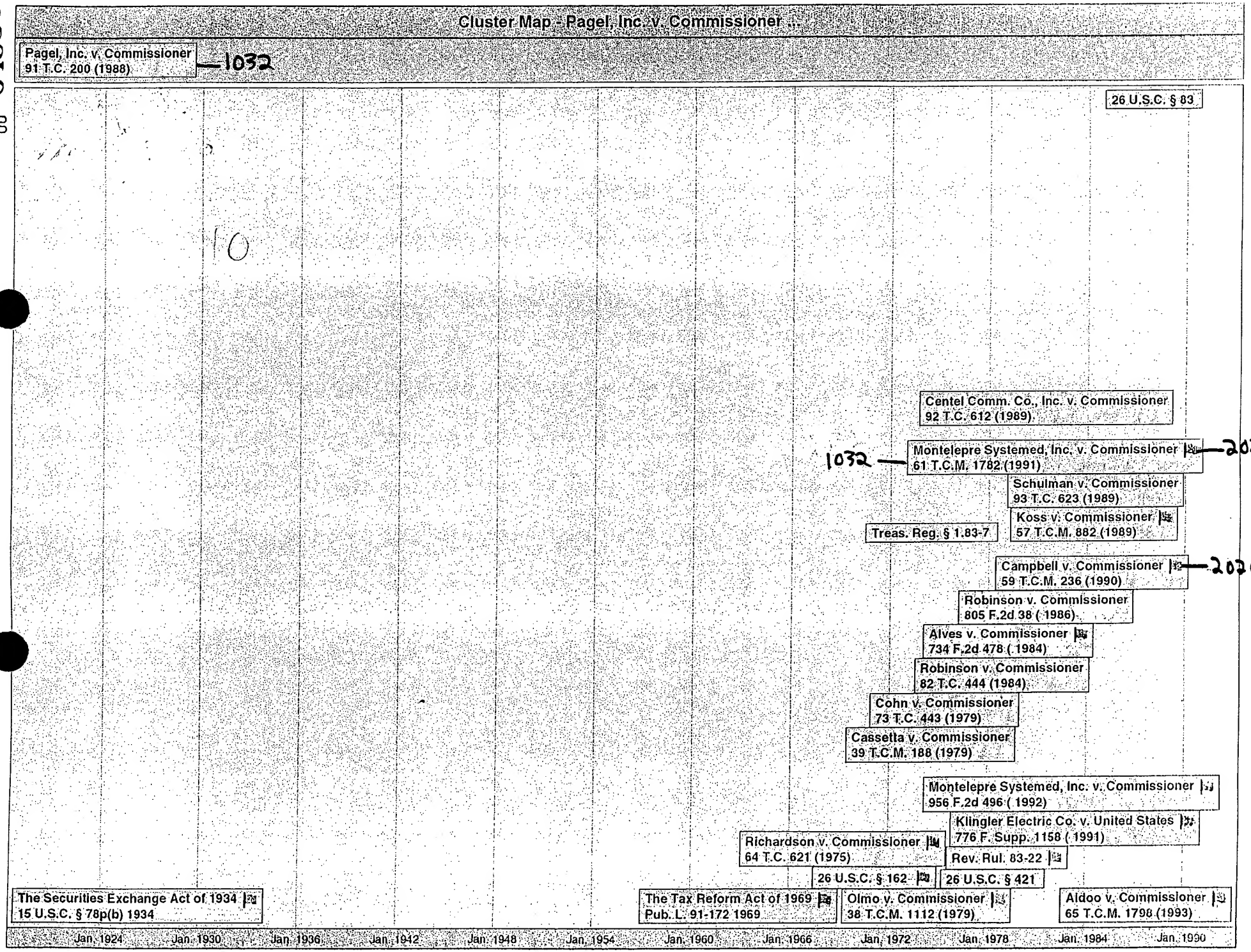

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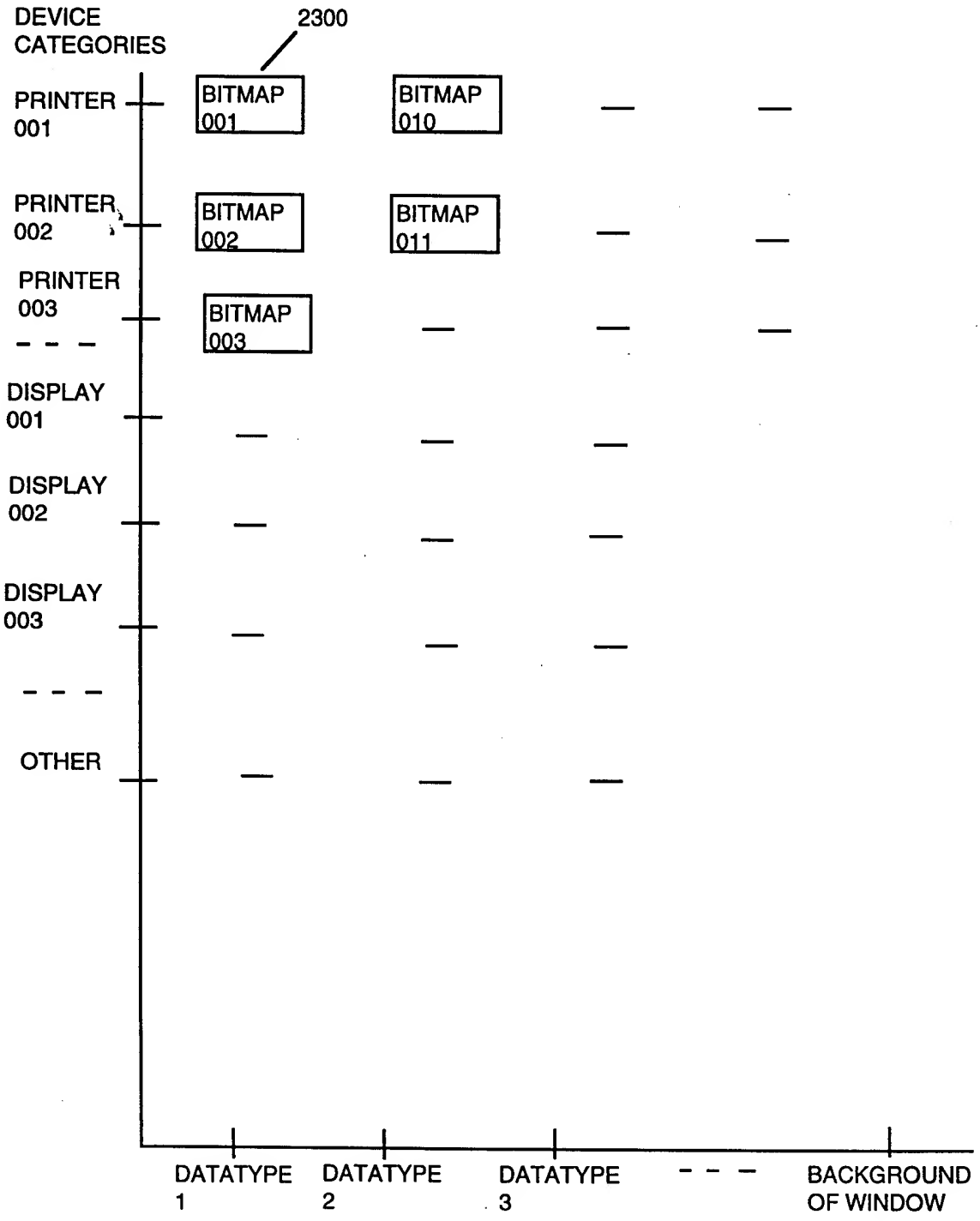
DEVICE CATEGORIES
2300
PRINTER 001
BITMAP 001
BITMAP 010
PRINTER 002
BITMAP 002
BITMAP 011
PRINTER 003
BITMAP 003
DISPLAY 001
DISPLAY 002
DISPLAY 003
OTHER
DATATYPE 1
DATATYPE 2
DATATYPE 3
BACKGROUND OF WINDOW
2308

Fig. 11

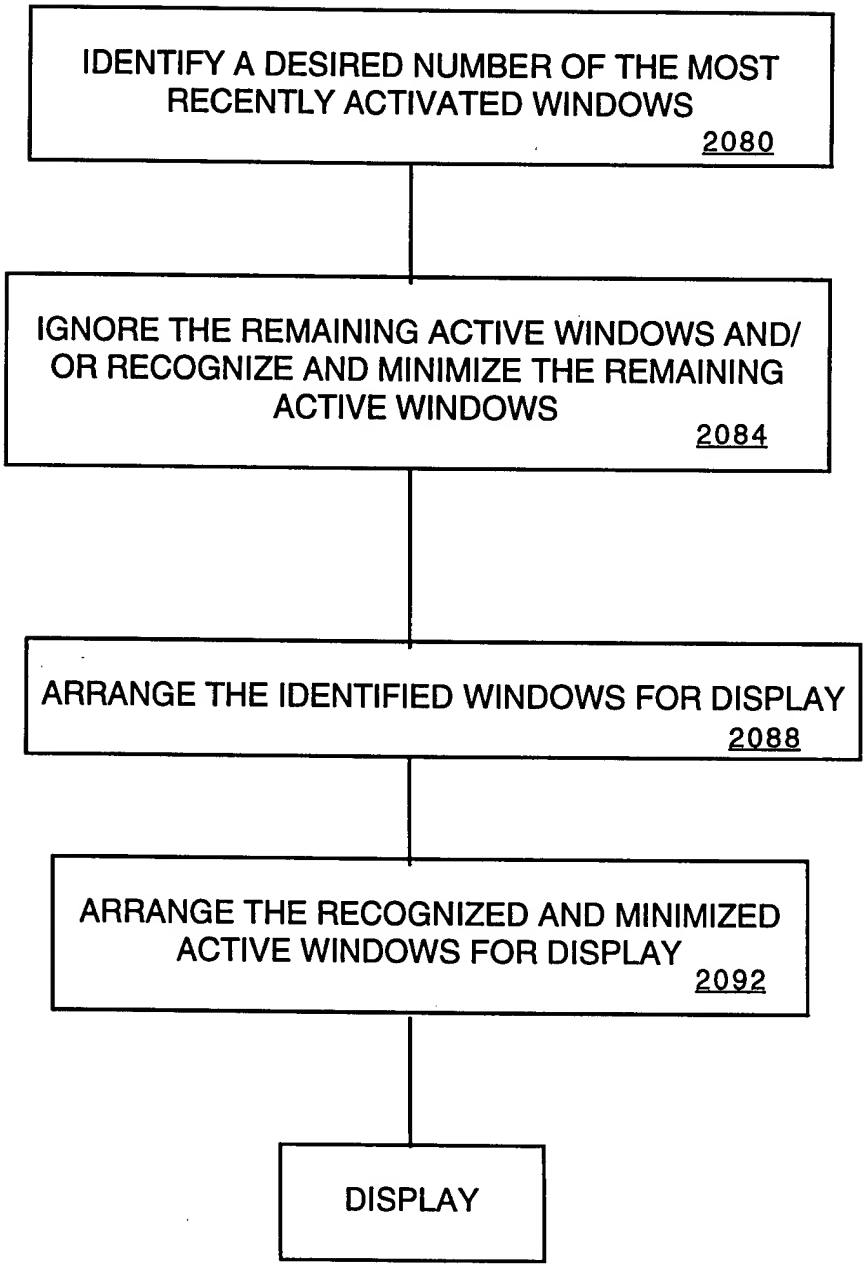
IDENTIFY A DESIRED NUMBER OF THE MOST RECENTLY ACTIVATED WINDOWS
2080
IGNORE THE REMAINING ACTIVE WINDOWS AND/ OR RECOGNIZE AND MINIMIZE THE REMAINING ACTIVE WINDOWS
2084
ARRANGE THE IDENTIFIED WINDOWS FOR DISPLAY
2088
ARRANGE THE RECOGNIZED AND MINIMIZED ACTIVE WINDOWS FOR DISPLAY
2092
DISPLAY

FIG. 12

US 6493O4 B1

FIG. 13A

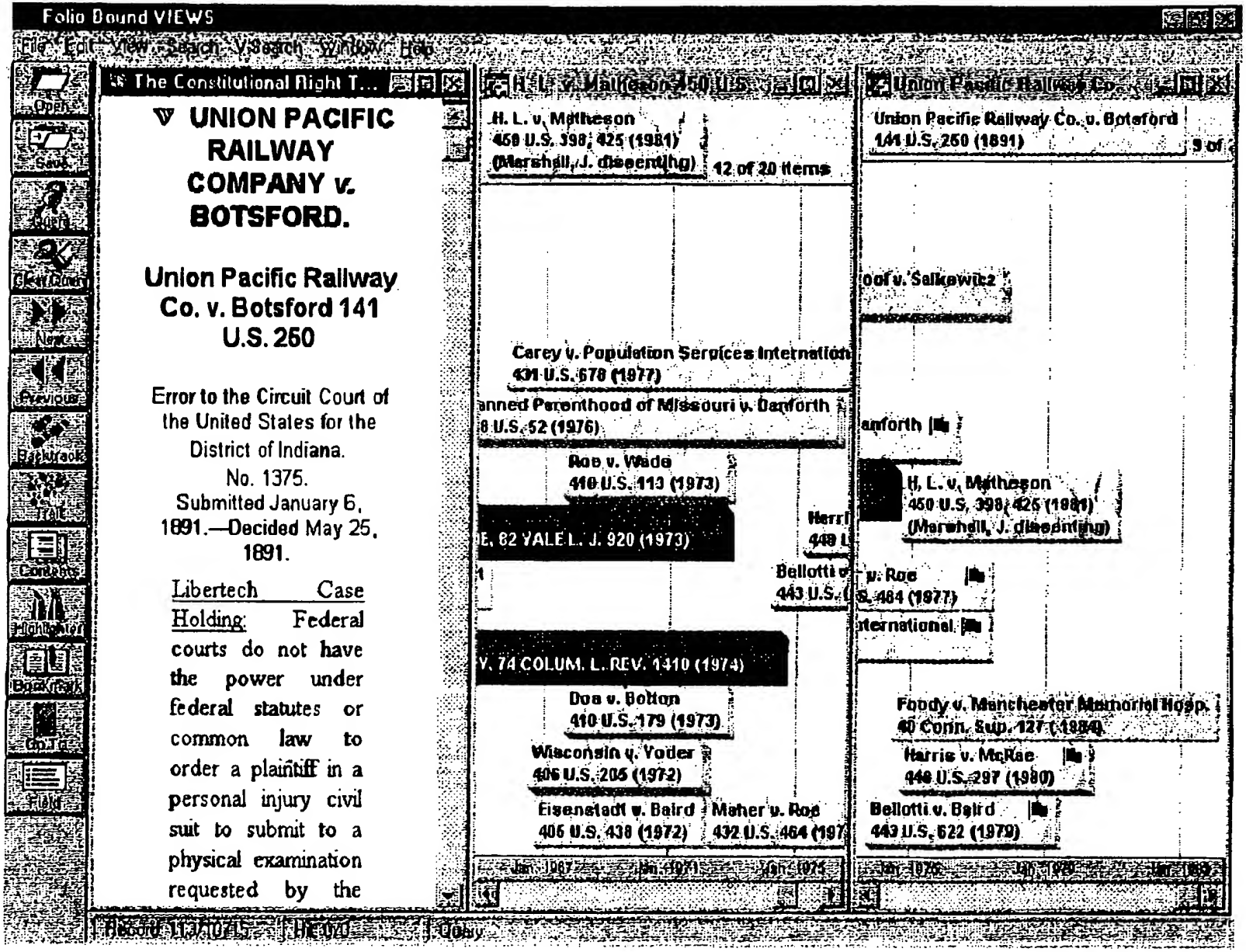

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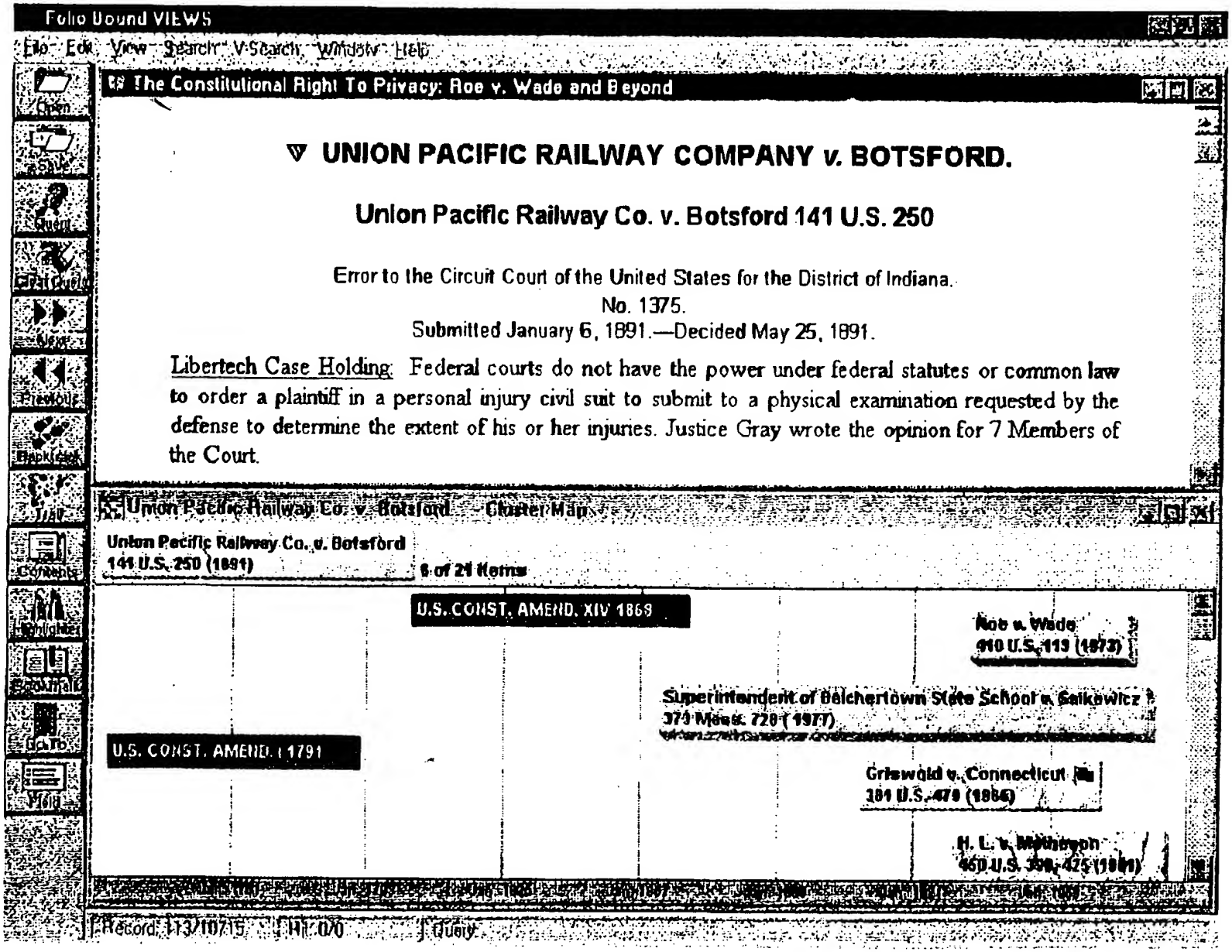
FIG. 13B



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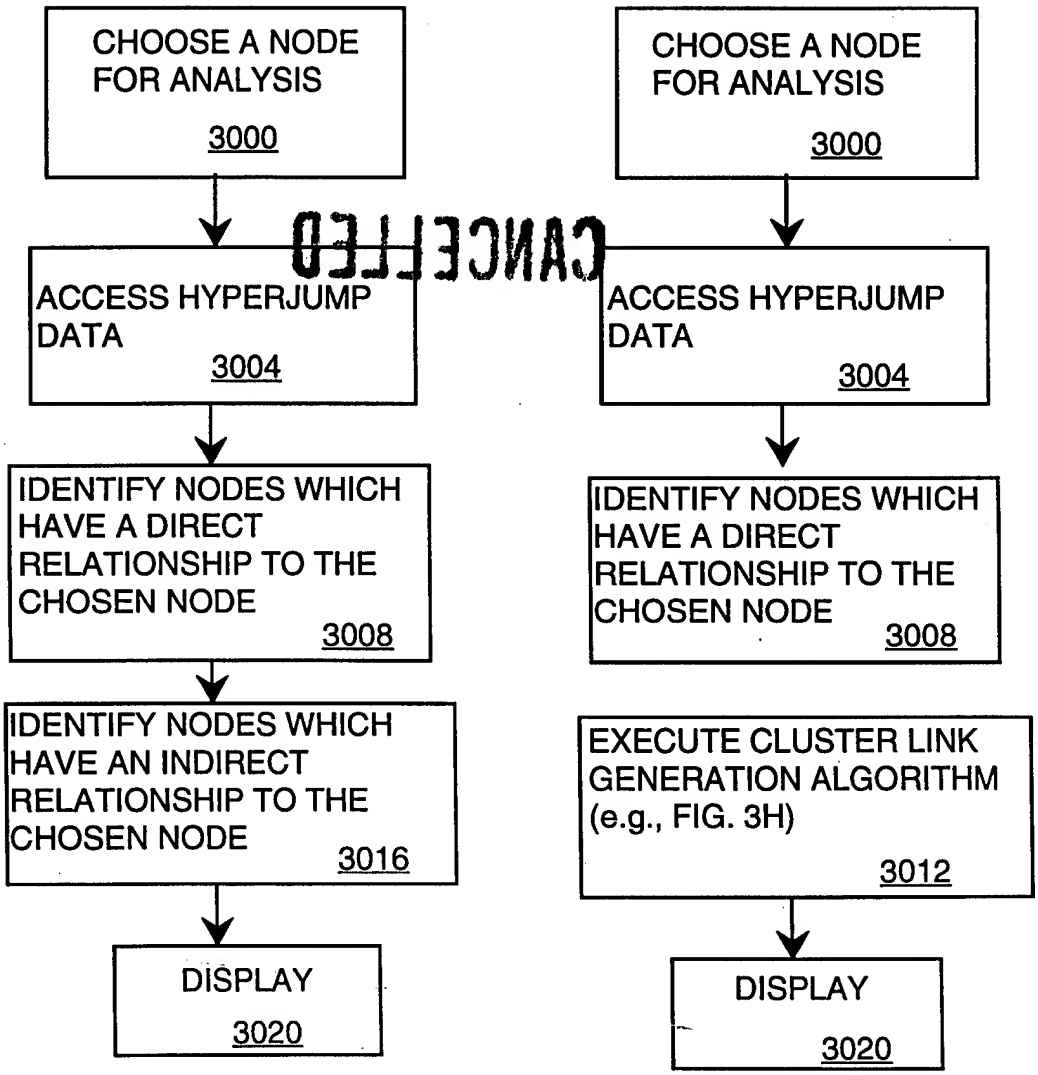

Fig. 14A

Fig. 14B